

Andrea Cuba

### Cooperative Learning Lab: Engaged Learning Science Lesson Using the 5e Framework

Big Idea: Heredity and Variation in Traits

Standards: [1-LS3-1 Heredity: Inheritance and Variation of Traits](#): Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.

#### I. Formation of Groups: (e.g. Human Graph Knowledge)

A. The students will already be assigned to a heterogeneous ability group according to their level of comprehension skill. This way it shows that there is a balance of the different levels that each child can bring into their group. Students will then be given the opportunity to explore the different animals, their young, and the parents.

II. **Role Assignments:** Beginning with the Checker all roles are assigned to the right (clockwise)-Although each student will have a role assignment. All of them will contribute to the worksheets, graphic organizers, and images that they will be given. These role assignments is an extra responsibility that they will be doing.

A. Materials Manager/Encourager:

- This person will be collecting the materials that will be needed for their group. This includes crayons, pencils, handouts, and materials. Once this student is done passing out the materials to their group members, they will become the encourager. This job requires that students encourage their group mates and provide feedback for the group.

B. Checker/Timekeeper:

- This student will be responsible for keeping the group on time and ensuring that they are completing the tasks in a timely manner. This student will also check the group work to ensure that the group did not miss any information or miss any key details. This will help keep the groups on task and making sure that the work is getting done.

C. Recorder:

- This person will be responsible for assuring that all relevant information is being written down. This can include informal notes during group discussion and the final collective assignment.

D. Observer/Reporter:

- This student will be responsible for individually checking each student's involvement in the project. They will have a checklist with various checks to ensure that each student is on task (e.g. the student is actively listening, the student is contributing to the discussion etc). The student will make the report to the teacher who can then assess participation of each student within that group.

E. Other: Traveler/Spy--Can be the checker

- This student will be responsible for physically travelling to other groups to see if other groups have information or ideas that their own group has not thought of yet. This will give the groups the opportunity to compare or contrast their findings and ideas with what others in the class are also working on.

Commented [SFB1]: . Provide a clipboard📄

### III. Task (See Big idea and Standards)

- A. The Big Idea is Heredity and Variation in Traits. The standard is: 1-LS3-1  
Heredity: Inheritance and Variation of Traits: Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.
- B. The objective/goal of this task is that students will be able to understand and recognize the differences between baby animals and their parents. This includes the different diets, roles, responsibilities, and physical attributes. This will allow students to think critically when comparing and contrasting the differences between baby animals and their parents. They will be able to understand the natural world and the ways that parents differ from their young and the different roles each animal has. The animals that will be discussed are bald eagles, dolphins, and elephants. These observations and understandings will broaden students' understanding of how the natural world works and introduce them to biology.
- C. The ultimate task for the students is that they will work collaboratively in groups to create their own "Animal Babies and Parents" booklet. Each group will be given an animal that they will focus on, and the groups will work together. Each spread of the book will focus on one animal. The first page of each spread will be focused on the young/baby animal. The second page of each spread will be focused on the adult animal. This way, students will complete the task of creating a book that compares the different traits and attributes of 3 different animals which discusses the young/baby and the adult.
  - The following diets, roles, responsibilities, and physical attributes will be discussed regarding the 3 different animals:
    - a) **Bald Eagles**
      - (1) Hatchlings/Chicks
        - (a) Baby eagles are first called hatchlings and then they are called chicks once they gain their feathers. They hatch from eggs and rely on their parents to bring them food. They eat only from their parents who regurgitate the food so their chicks can eat. Eagles stay with their parents for 11-13 weeks. During this time they learn to fly, and hunt for food.
      - (2) Adult Eagles
        - (a) Adult birds find a mate. Usually, the male attracts the female and they build a nest together. Most male birds defend the nest as he and the female bird take turns incubating the eggs. Once the eggs

hatch, the male and female bird find food to regurgitate to feed the chicks. Adult eagles hunt using their strong talons and can spot prey on the ground with the help of their nictitating membranes in their eyes.

**Commented [SFB2]:** Good vocabulary word for students to learn. BTW might you consider creating a word wall to promote language arts and assist your ELLs?

#### **b) Dolphins**

##### (1) Calves

(a) Baby dolphins are called calves. The calves stay with their mother for 3-6 years from the time they are born. During their time with their mothers, they learn to catch and hunt food, avoid predators, and navigate among their school, or group of dolphins.

##### (2) Adult Dolphins

(a) Adult dolphins teach their young how to catch fish, swim in a school, and avoid predators. Adult dolphins also use echolocation to communicate with other dolphins.

#### **c) Elephants**

##### (1) Calves

(a) Baby elephants are called calves (like dolphins). The calves stay with their mothers for about 16 years before being on their own. After 2 years old, the baby can begin to eat on their own. Calves are not under strict supervision and are usually curious and will explore independently.

##### (2) Adult Elephants

(a) A family of elephants is called a herd. They are led by the females, which means that it is matriarchal. A mother is helped by the other females, or aunts, in the herd in raising the calf. The male elephants are called the bulls. Bulls may leave the herd to join another when they are 15 or 16 years old.

#### D. Delivery of Instruction, Assignments, and Assessment

#### ENGAGE

##### ■ **First Day of Instruction:**

##### a) Hook: How to engage students from the start.

(1) To introduce the concept of different physical traits between baby and adult animals, the teacher will present photographs of baby and adult of the three focus animals: bald eagles, dolphins, and elephants. The teacher will display the question: What do you notice is the same or different?

(2) Students will be given the opportunity to make connections using a thumb-up method.

(3) They will be able to pair share with their partners on the rug and discuss the differences or similarities that they notice in the photographs between the baby animals and their parents.

(4) After a couple of minutes have passed by, the teacher will then ask the students to share what they think the lessons will be about. As a class, we will begin to create a **KWL Chart in order to monitor our learning as a class**. Each student will have a chance to share what they Know about animal babies and parents, which will be written by the teacher under 'K'. The class will also share what they Want to know and the teacher will write it in the 'W'.

(5) Here, the teacher will be able to gather information of what the students know already and what they will need emphasized throughout the lesson.

(6) Once the teacher has heard the ideas and thoughts from the students, they will explain the concept of the biology/science lessons for that week.

b) Introduction to Baby Animals and their Parents

(1) The teacher will have videos prepared to show the class that help introduce the different animals they will be learning about that week.

(2) Many visuals will be used throughout the lessons because the main objective for the students is to **make observations** of the differences and similarities between animal babies and their parents.

(3) An explanation and introduction will be given using the following videos:

(a) Bald Eagles:

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

(b) Dolphins:

<https://www.youtube.com/watch?v=Nsk4u0IMmTE>

(c) Elephants:

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

(4) This first day will cover introducing the 3 animals that we will be focusing on during the week: bald eagles, dolphins, and elephants.

(5) The class will discuss the videos and talk about their favorite animals

(6) The class will add to their **KWL Chart** after the video.

**Commented [SFB3]:** I would suggest that they hold up cards that say "same" or "different"  
Thumbs-up is a rather over-used and low-engagement method that really does not promote responsive thinking—or valid information for teachers to offer feedback.

**Commented [SFB4]:** This is an effective strategy. Also consider having partners report out on what the other partner shard.

**Commented [SFB5]:** Who? Students or teacher?

**Commented [SFB6]:** I agree that visuals are both needed and helpful.

■ Day 2: Bald Eagles

- a) By this time in the lesson, The students will already be familiar with the different physical traits between the three baby animals and their parents.
- b) Bald Eagle plush or model animals that are true to scale of a hatchling/chick and adult bald eagle may be presented in order for students to visually see the size differences.
- c) Possible Realia: eagle feathers, eagle talons, stuffed animals, etc.
- d) Visuals will be displayed of the bald eagle hatchlings/chicks and the adult bald eagle. The teacher will lead a discussion on the physical similarities and differences between them and model how to organize these comparisons using a Venn Diagram.
- e) The teacher will read *The Bald Eagle* by Judith Jango-Cohen. The teacher will model a think-aloud as they read the books in order to engage students in the different roles between baby bald eagles and their parents.
  - (1) Continuation of making comparisons:
    - (a) The class will work in their table groups and discuss the similarities and differences between baby bald eagles and their parents.
    - (b) The groups will use a Venn diagram in order to organize their information as a group.
    - (c) The groups will also fill in their first spread of their "Animal Babies and Parents" on their Bald Eagles page and write about and draw the baby bald eagle on the left and the adult bald eagle on the right.
  - f) Once the groups have completed their spreads of their "Animal Babies and Parents" booklet and their Venn Diagram, they will meet on the rug for a wrap-up.

**Commented [SFB7]:** The Sierra Club offers these each year.

**Commented [SFB8]:** Excellent inclusion of literature in the lesson..

**Commented [SFB9]:** A good selection of graphic organizer for this grade level.

■ Day 3: Dolphins

- a) The class will watch the video about dolphins again in order to re-engage the class.
- b) Dolphin plush or model animals that are true to scale of a calf and adult dolphin may be presented in order for students to visually see the size differences.
- c) Possible Realia: plush or model squid or fish that dolphins eat, etc.
- d) Visuals will be displayed of the dolphin calves and the adult dolphins. The teacher will lead a discussion on the physical similarities and differences between them and model how to organize these comparisons using a Venn Diagram.
- e) The teacher will read *Dolphin Baby!* by Nicola Davies. The teacher will model a think-aloud as they read the books in order to engage

students in the different roles between baby dolphins and their parents.

- f) Continuation of making comparisons:
  - (1) The class will work in their table groups and discuss the similarities and differences between baby dolphins and their parents.
  - (2) The groups will use a Venn diagram in order to organize their information as a group.
  - (3) The groups will also fill in their second spread of their “Animal Babies and Parents” on their Dolphins page and write about and draw the baby dolphin on the left and the adult dolphin on the right.
- g) Once the groups have completed their spreads of their “Animal Babies and Parents” booklet and their Venn Diagram, they will meet on the rug for a wrap-up.

■ Day 4: Elephants

- a) By this day in the lesson segment, the students will already be familiar with how to use a Venn Diagram, fill out their “Animal Babies and Parents” booklet, and work in groups collaboratively.
- b) The class will watch the video about elephants again in order to re-engage the class.
- c) Elephant plush or model animals that are true to scale of a calf and adult elephant may be presented in order for students to visually see the size differences.
- d) Possible Realia: faux ivory, etc.
- e) Visuals will be displayed of the elephant calves and the adult elephants. The teacher will lead a discussion on the physical similarities and differences between them.
- f) The teacher will read *Grandma Elephant’s in Charge* by Nicola Davies. The teacher will model a think-aloud as they read the books in order to engage students in the different roles between baby elephants and their parents.
- g) Continuation of making comparisons:
  - (1) The class will work in their table groups and discuss the similarities and differences between baby elephants and their parents.
  - (2) The groups will use a Venn diagram in order to organize their information as a group.
  - (3) The groups will also fill in their second spread of their “Animal Babies and Parents” on their Elephants page and write about and draw the baby elephant on the left and the adult elephant on the right.

■ Day 5: Presentation and Discussion

**Commented [SFB10]:** I do like the way in which you have established a pattern and rhythm to the lesson.

**Commented [SFB11]:** If you are unable to find these props for your lesson, you might consider having them model out of play doh or clay. In this way you will meet the NGSS Developing and Using Models.

- a) Students have already completed their assignments. Each group will have the opportunity to discuss the comparisons they found for each animal. They will talk about how their team worked together and give a brief explanation of what their group observed.
- b) After each group is done presenting, the class will give them a class cheer depending on what they chose.
- c) Once all groups have gone up, the students will be given an assessment that will test their knowledge of recognizing and understanding the similarities and differences between baby animals and their parents. If possible, students will be asked to write a small reflection of what they enjoyed about learning about the different animal babies and their parents.
- d) The unit has been complete. The teacher may choose to display the Venn Diagrams that the groups completed and showcase them in order to support students' self-esteem in their work.

**Commented [SFB12]:** ☺

**Commented [SFB13]:** Will you present this as a checklist or rubric that they know from the start of the lesson what the performance expectations are?

**Commented [SFB14]:** Learning log or exit ticket. See the authentic assessment document in our course resource page.

#### IV. Time Limits:

##### A. On the first and second day of instruction:

- Students will be given 35-40 minutes of direct instruction with student engagement included through think-pair-share and inquiry response.
  - a) The teacher will introduce and explain/define each of the different animal traits and the key vocabulary definitions such as: comparison, comparing, similarities, differences, physical traits, roles, and diet.
- Then, students will be given the opportunity to share their thoughts to the class of what they are learning which will be used to complete the KWL Chart as a class by the end of Day 2.

**Commented [SFB15]:** Consider a day one learning log. What's one thing you knew? What is one thing you are excited to learn? What is one thing you did to help your group?

##### B. The next consecutive days:

- Students will be given 15-20 minutes of direct instruction.
  - a) The teacher will introduce and distribute graphic organizers and "Animal Babies and Parents" booklet.
  - b) Direct instruction will focus on teaching students how to use the graphic organizers, worksheets, and images. Direct instruction will also be used for the read-aloud.
- Students will be given 20-30 minutes to work in groups.
- The last 5 to 7 minutes of the lesson will consist of the teacher wrapping up and the groups sharing what their groups collaboratively found.

**Commented [SFB16]:** Yes. Important.

#### V. Social Skills and/or Habits of Mind to Engage/Assess:

- A. Teamwork will be needed in this activity. Since students are working together to make observations about their focus animal that day. A successful team will be able to share their ideas clearly and as a teacher, we will be able to see whether or not a team worked well together based on the Venn Diagram they complete and the presentation they give.

**Commented [SFB17]:** You do need to include a performance assessment for each of these. See the resources provided on the website. Also see this search link:  
<https://images.search.yahoo.com/search/images?p=kindergarten+rubric+for+a+venn+diagram&fr=mcafee&imgurl=https%3A%2F%2Fs-media-cache-ak0.pinimg.com%2F736x%2F07%2F52%2F9c%2F07529cde-a90f566632d9f626a74b3778.jpg?id=14&iurl=https%3A%2F%2Fwww.lessons4learners.com%2Fuploads%2F4%2F3%2F8%2F5%2F4385398%2Ffrog+and+toad+different+and+alike+rubr+ic.png&action=click>

- B. Collaboration will also be needed. In order to work together as a group, the students must collaborate and everyone in the group must do their job accordingly which will help them all work together. They must all collaborate in order to complete their Venn Diagram and assist each other in completing their “Animal Babies and Parents” booklet.
- C. Listening and communicating is another aspect that is important in this task. Students are encouraged to listen to their classmates entirely before responding and sharing their thoughts. Emphasizing listening will enhance how they will communicate with one another. It also shows a sign of respect to one another.

VI. Level of Voice: (Classroom Level 2-Normal Voice Table Talk)

- A. During direct instruction, students are to remain quiet and respectful to the person who has the floor, whether it be another student or the teacher.
- B. During group discussion and workshop time, students will use Classroom Level 2 - Normal Voice Table Talk.
- C. If the class becomes too loud, the teacher will say, “Waterfall, waterfall!” and students should respond with “Shhh” which will remind them to bring their noise level back to a Level 2.

VII. Processing--Questions for groups and individual reflections:

- A. Once each group shares the observations they made, the class may choose to ask questions to the presenters. The presenters have a chance to explain and answer questions. Students who also agree with the presenters may do so by showing a thumbs-up. This lets the presenters know which students agree with them. If the teacher notices any disagreements, they should be addressed and clarified. This shows the class that we all help each other learn and that we are all on a learning journey together.



EVALUATE

VIII. Assessment Content:

A. Assessment of Cooperation/Collaboration and Student

- The overall assessment of cooperation and collaboration will be based on the collaborative Venn Diagram. Venn Diagrams for each animal will show how involved each group was during the activity. The Venn Diagrams should be complete and filled with either picture explanations or written explanations.





B. Self-Assessment of Collaborative Performance

- The self-assessment that will be provided at the end of the lesson will be one that consists of having students draw, complete multiple choice questions, and orally explain their understanding. The variation in questions will allow the teacher to assess students of different learning needs.

C. Peer Assessment (Rate Your Mates)

- For this part, students will be given the chance to assess each of their classmates in the group. They will be given a four level rubric, however, four smiley faces will replace the numbers. Students will then circle which smiley face best fits the grade they want to give their peers. Prior to giving students this task, the teacher will orally explain what these faces represent as well as provide a written description underneath each emoticon face. If students grade their peers too low, as a teacher, we will have a conference in order for the student to elaborate on their response.

**Commented [SFB18]:** Try one from Karen Schrock: <http://www.schrockguide.net/uploads/3/9/2/2/392267/k-2.jpg>

			
This person was very helpful and a great partner.	This person helped and was a good partner.	This person could have helped more.	This person was not helpful.

IX. Encouraging Energizer:

- A. This will vary based on what the team selects for their energizer. As part of their assignment, they will need to select ahead of time which energizer they would want as a group.