

EED 480

Student Project-Based Learning

I. Title and Grade Level: Endangered Animals- 5th grade

II. *BIG IDEA:* *Let's investigate which animals have become endangered? What has caused these animals to become endangered?*

III. TASKS: We will

A. Look at graphs representing the decrease of animals in California (bald eagle, sea otter, green sea turtle, etc.).
Brainstorm ideas as to why this is happening.

B. Divide into expert groups (6 students per group).
Students will be placed in a group and research an endangered animal in California.

C. The group members from each expert group will divide into another group in which they will look for similarities and differences amongst the endangered species. Additionally, students will work on researching developing a solution to the problem and writing a letter to state representatives in Sacramento.

D. Finally, students will pretend they are pitching their solution to a representative in Sacramento.

IV. JUSTIFICATION This lesson series is a STEM and Social Studies integrated for the topic of endangered species. This and STEM and social studies integrated lesson since it is about a social issue while incorporating science, technology, engineering, and math.

V. STANDARDS: Grade Level and Subject Area: Kindergarten to 5th Science, Social Studies, Language Arts, Mathematics and the Arts

Grade Level and Subject Area: 5th grade- Science

SOCIAL STUDIES:

4.1 Students demonstrate an understanding of the physical and human geographic features that define places and regions in California.

ELA/Literacy:

5.SL.4.Report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

CCSS MATHEMATICS: 5. MD.2. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Use operations on fractions for this grade to solve problems involving information presented in line plots

NGSS (Next Generation Science Standards): NGSS.5-ESS3-

1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

- A. Disciplinary Core Ideas:** ESS3.C: Human Impacts on Earth Systems- Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)
- B. Science and Engineering Practices:** Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1)
- C. Crosscutting Concepts:** A system can be described in terms of its components and their interactions. (5-ESS3-1)

VI. ENGAGING CONTEXT: Hook- Launch activity

In order to capture the students' attention, I will display images of the endangered species. Along with chart demonstrating the decline in population of selected species. This will spark student curiosity as to why these is happening.

]VII. MEASURABLE OBJECTIVES

- A. As student thinking drives this lesson, students can pursue their own inquiry: *Students will investigate why a certain species is becoming extinct and develop solutions for the problem.*
- B. As the culminating activity of this PBL students will create a project or presentation that meets the objective of the Big idea. *Students will create a pitch that they will present to a representative in Sacramento regarding why to prevent species from becoming extinct.*

VIII TOTAL TIME:

Launch event-One: Class Periods of 45 minutes;

Building Knowledge: Two- 45 Class Periods; 90 minutes

Showing Knowledge (Claims and Evidence) 40 minutes
(Students develop and revise products and or performances)

IX. Social Skills and or Habits of Mind to Engage/Assess

<ul style="list-style-type: none">[x] Persistence[x] Decreasing impulsivity[x] Empathic listening[x] Flexibility in thinking[x] Metacognitive awareness[x] Checking for accuracy[x] Questioning	<ul style="list-style-type: none">[x] Problem posing[x] Drawing on past knowledge[x] Application to new situations[x] Precision of language and thought[x] Using all the senses[x] Ingenuity, originality, insightfulness and creativity[x] Inquisitiveness, curiosity[x] Enjoyment of problem solving
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IX. Level of Voice Appropriate for Activity:

Noise Levels

	SILENT MISSION: Silent - No talking at all
	TOP SECRET PLAN: Quiet - Only you and a partner
	SUPER TEAM TASK: Normal - Just your table team
	POWER VOICE: Strong - Hear it across the room
	BIONIC NOISE: Loud - Only used outside

X. **BSCS 5-E Framework**

Engage:

- A. **DIRECT INSTRUCTION:** forming groups, assigning roles, describing roles and tasks

Forming the Expert Groups

Students stand in a line according to how much they know about animals in North America. That line is then turned into two lines and then the students are grouped into 5 groups of 6 students. In each group, the students will be numbered 1-6. For 45 minutes, each group will become an expert about one endangered species in North America.

- Group 1: Giant Sea-bass.
- Group 2: Red Fox
- Group 3: Vancouver Marmot
- Group 4: Raccoon
- Group 5: Sea Turtle
- Group 6: Amur Leopard

Materials Manager: Student will be directed on what materials are available during the activity. They will gather, manage, collect and distribute materials for the activity. They will also be responsible of ensuring that all group members clean up.

Checker's Tasks - Listens and keeps track of time as assigned by the teacher. They also check in to see how much more they need to accomplish. Student will also ask questions when needed.

Recorder's Tasks: Student will keep track of the responses from the

group. They will write down all of the members' ideas to help group decide what they want to use or help combine group members ideas. Student will also write the pitch that the team creates.

Encourager/Observer' s Task - Coach the team to persevere and stay together while sharing and turn-taking. Notice, identify and record occurrence of team members' social skills and habits of mind (Observer records individual performance).

Traveler/Spy - Student can briefly observe another group and analyze how they are structuring their pitch or observe what information they have investigated. This will help the group create a pitch that will receive the most votes when presenting to the class. Also, if the team has a question following Three Before ME go to another team to answer your question [or see what they have learned].

Checklists and Rubrics:

Cooperative Group Checklist

Group Member Name	Encouraging/ Perseverance	Attentive Listening	Respectfully agreeing to disagree	Remaining with group throughout activity and participating in their role

Scoring Key: **X** = Never **✓** = Sometimes **O** = Frequently

Self-Assessment of Collaborative Performance: students will then assess themselves using a checklist that includes a quick response.

Student Name: _____

Role: _____

How Did I Do?

	Never	Sometimes	Yes
Stayed in your group			
Used your table voice			
Practiced good listening skills			
Disagreed with the idea but not your group member(s)			

Participated in your assigned role			
Overall, how do you feel you did in this activity?			

Final Project Rubric:

	Not Yet 1	Almost There 2	Got It!! 3
Made predictions regarding why animals are becoming endangered.	No evidence of predictions regarding why species are becoming endangered.	Team shows good evidence of predictions regarding why species are becoming endangered.	Excellent evidence of predictions regarding why species are becoming endangered.
Completed investigation on effective techniques to prevent species from becoming extinct	Team demonstrated an inability to develop techniques to prevent species from becoming extinct.	Team was able to develop 1 techniques to prevent species from becoming extinct.	Team effectively developed 3 techniques to prevent species from becoming extinct.
TOTAL TEAM POINTS			

Explore: Developing Questions

Tell the students they will conduct an investigation: "Why is _____ an endangered species? Why is this happening? What can we do to prevent animals from becoming endangered species?" Allow students to collaborate in groups.

Observe and ask questions- What questions do they have about the material?

Record questions and answers on the board. All the groups will share their questions and the rest of the class can answer if they have the response. The questions and answers will be displayed on the board so the students can see and refer back to during the investigation

Form and record the hypothesis- Problem-posing, "Why are animals becoming endangered? What can we do to prevent this from happening?" Have students write their hypothesis using an "IF and Then" statement. Provide students an example of a possible hypothesis.

Timed so students can stay focused on completing the task.

Explain:

Students are asked: *What information will you need in order to test your hypothesis? What steps will you take to do the investigation?* Once students have repeated the steps of the investigation, I will explain that they will be using iPads to research reasons why their chosen animal became endangered. Additionally, I will explain that they will need to think of possible solutions for the problem.

Part 1: Have each team research information about their endangered species. Collect as much information as they can and derive to a common reason as to why that species became endangered.

Part 2: Ask student, what are some possible solutions to this problem. Allow the students to share with their group. I will inform the students that the investigation will require that they research some things they can do to prevent those animals from becoming extinct. They will research information and develop a pitch.

Extend/Elaborate:

Have each group share some of the overlapping reasons why animals are becoming endangered and possible solutions to the problem. Additionally, have students elaborate why these solutions work in protecting the endangered species. Record student's responses on the board.

XI. Materials List: iPads, notecards, markers, pictures of endangered species, charts. □ □

Evaluate: (Assess):

Each group will pretend they are pitching their solutions to preventing species from becoming extinct to a California governor. They will explain what is causing these species to become endangered and explain possible solutions.