NATIONAL GEOGRAPHIC

RESOURCE LIBRARY
ACTIVITY : 50 MINS

Magazine Design Workshop II

Students engage in focused group work on their unit project, a magazine modeled on *National Geographic*. Publishing groups develop their *Featured Marine Organism Profile* and finalize their *Food Web Infographic*, as well as other unfinished elements.

GRADES

6 - 8

SUBJECTS

Arts and Music, Biology, Ecology, Health, Conservation, English Language Arts, Storytelling

CONTENTS

4 PDFs

OVERVIEW

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For the complete activity with media resources, visit:
http://www.nationalgeographic.org/activity/magazine-design-workshop-ii/

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DIRECTIONS

***Plastics: From Pollution to Solutions* unit driving question**: *How can humans solve our plastic problem in the ocean?*

***Plastic in the Plankton, Plastic on your Plate* lesson driving question**: *How do plastics affect ocean organisms and ecosystems?*

1. Prepare students for focused group project work.

- Use personal reflection to remind students that their project is meaningful, and to ensure that limited group work time will be well spent.
    - Ask: *What is your favorite marine organism and why?*
    - Ask: *How can plastics impact that organism?* Possible responses:
        - They can ingest microplastics, which can block their ability to digest food.
        - Ingested microplastics can also deliver toxics, such as PCBs and BPA.
        - Organisms can also become entangled in plastics, which can lead to wounds, infection, deformed limbs, and decreased mobility.
- Ensure that all groups have their *Final Project Checklist and Rubric* with three key items highlighted:
    - *Featured Marine Organism Profile*, showing how plastics impact that organism specifically
    - *Food Web Infographic,* explaining the process of biomagnification in an ocean ecosystem (This is the same document publishing teams started working on in the *Biomagnification and Bioaccumulation* activity.)
    - Glossary of related vocabulary used in the magazine
- Provide models of each of these elements for students to analyze.
    - For the *Featured Marine Organism Profile*, show students the *Orangutan* profile from National Geographic's Photo Ark.
        - Point out how it includes colorful pictures and basic information, including size, habitat, diet, and behavior.
        - Highlight the final section about threats to survival. Emphasize to students that this will be an important piece of their *Featured Marine Organism Profile*.
- Distribute the *Featured Marine Organism Profile* handout.

- For teams that did not finish the *Food Web Infographic* in the previous activity, it may be helpful to provide copies of one or two *Food Web Infographic Answer Keys* provided in the *Biomagnification and Bioaccumulation* activity as examples of a completed food web. Make sure the answer keys you provide don't match the ecosystem the team has been assigned, so each team still has the experience of creating a food web for their ecosystem.
- For the glossary, there are 13 new vocabulary words that have been introduced in the two previous activities, *Under the Sea* and *Biomagnification and Bioaccumulation*.

    - Teams should include all of these words in their glossaries with student-friendly definitions and meaningful sentences.

- Instruct groups to spend a few minutes discussing ideas and compiling notes as a group, and then quickly moving on to divide appropriate tasks between group members.

    - Monitor and support groups by checking in with each group and individual group members about their progress. Answer any clarifying questions that arise about the rubric or project expectations.
    - Highlight positive examples of teamwork as you witness them.

2. Wrap up with a gallery walk to demonstrate group progress.

- Prompt students to clean up their project work areas, clearing away all materials and notes except for the products of their teamwork.
- Acknowledge that the magazines are still works in progress, but that every team is getting closer to their goal.
- Explain to students that they will spend a few minutes walking around the room quietly to view their peers' work, then return to their seats.
- Ask students for examples of teams whose work they admired. Tell students to refer to the *Final Project Checklist and Rubric* so they can provide meaningful feedback, both positive and constructive.
- Finally, have students update the class *Know and Need to Know* chart, using their *Final Project Checklist and Rubric* as a reference, to indicate what else they still need to know in order to finish the rest of their final project. Possible responses may include:

    - We still need to write survey questions about community members' attitudes and behaviors regarding plastics, administer the survey, and analyze results.
    - We still need to write a profile of the winner of the 2019 Ocean Plastic Innovation Challenge and a *Call to Action* for readers.

Tip

- **Step 1:** To read more about structuring time and expectations for teamwork, read *5 Strategies for Making Project Work Time More Productive* from the PBL Works blog. To read more about assigning roles to team members, read *Roles in PBL: 3 Approaches For Organizing Group Tasks* from the PBL Works blog.
- **Step 1:** For teams that benefit from extra time management scaffolding, read *The Ultimate Teamwork Management Tool: Kanban Boards* from the PBL Works blog.
- **Step 1:** A well-documented phenomenon in extended project-based learning is the mid-project slump. Read about *The Surprising Science of Project Fatigue (And How Teachers Can Help Prevent It)* from PBL Works. The article *29.5 Tips for Successfully Managing a Project* also contains useful ways to troubleshoot problems that arise from team dynamics.

Informal Assessment

Students' abilities to model matter and energy flows in ecosystems are demonstrated by their *Food Web Infographics*. Their *Featured Marine Organism Profiles* demonstrate their ability to use accurate, relevant data and credible sources to support claims. As with all other documents that will be part of the final project, these should be stored in the publishing team's project folder. Students' abilities to revise models and use oral arguments are demonstrated by their reflections of their own progress and their feedback to other teams.

OBJECTIVES

Subjects & Disciplines

- Arts and Music
  Biology
  - Ecology
  - Health
- Conservation
- English Language Arts
  Storytelling

Learning Objectives

Students will:

- Articulate a personal connection to their unit project.
- Synthesize information from notes and resources to make progress toward unit project goals.
- Reflect on what information they still need to embark on the next steps of their project.

Teaching Approach

- Project-based learning

Teaching Methods

- Cooperative learning
- Reflection
- Writing

Skills Summary

This activity targets the following skills:

- 21st Century Student Outcomes
  - Learning and Innovation Skills
    - Communication and Collaboration
    - Creativity and Innovation
    - Critical Thinking and Problem Solving
  - Life and Career Skills
    - Initiative and Self-Direction
    - Leadership and Responsibility
    - Productivity and Accountability
- Critical Thinking Skills
  - Creating
- Science and Engineering Practices
  - Constructing explanations (for science) and designing solutions (for engineering)
  - Obtaining, evaluating, and communicating information

National Standards, Principles, and Practices

NATIONAL GEOGRAPHY STANDARDS

• **Standard 8:**
The characteristics and spatial distribution of ecosystems and biomes on Earth's surface

COMMON CORE STATE STANDARDS FOR ENGLISH LANGUAGE ARTS & LITERACY

• **CCSS.ELA-Literacy.WHST.6-8.1:**
Write arguments focused on discipline-specific content.
• **CCSS.ELA-LITERACY.WHST.6-8.1.B:**
Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.

NEXT GENERATION SCIENCE STANDARDS

• **MS-LS2-3:**
Develop a model to describe the cycling of matter and flow of energy among living and nonliving parts of an ecosystem.
• **Science and Engineering Practice 2:**
Developing and using models
• **Science and Engineering Practice 7:**
Engaging in argument from evidence

Preparation

What You'll Need

REQUIRED TECHNOLOGY

- Internet Access: Required
- Tech Setup: 1 computer per pair

PHYSICAL SPACE

- Classroom

SETUP

Print the *Featured Marine Organism Profile* single-sided on two separate sheets of paper, so that these pages can face each other in the magazine.

GROUPING

- Large-group instruction
- Small-group work

BACKGROUND & VOCABULARY

Background Information

The creation of food webs and focal marine organism profiles are authentic parts of the work of ecologists. Students are taking on the roles of researchers, writers, and graphic designers in this activity, which are all roles that can be found outside the classroom. Students will find the work of creating and presenting their *Food Web Infographics* and *Focal Marine Organism Profiles* relevant if their connections to marine organisms and ecosystems are genuine, and they will find the role of audience member relevant if they are able to provide meaningful feedback to their peers.

Prior Knowledge

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Recommended Prior Activities

- Autopsy of an Albatross
- Follow the Friendly Floatees
- Magazine Design Workshop I
- Plastics Aplenty
- The Life Cycle of Plastics

Vocabulary

Term	Part of Speech	Definition
adhere	*verb*	to stick to or support.
apex predator	*noun*	species at the top of the food chain, with no predators of its own. Also called an alpha predator or top predator.
bioaccumulation	*noun*	process by which chemicals are absorbed by an organism, either from exposure to a substance with the chemical or by consumption of food containing the chemical.
biomagnification	*noun*	process in which the concentration of a substance increases as it passes up the food chain.
decomposer	*noun*	organism that breaks down dead organic material; also sometimes referred to as detritivores
ecosystem	*noun*	community and interactions of living and nonliving things in an area.
ecotoxicology	*noun*	study of substances that are harmful to the environment.
food web	*noun*	all related food chains in an ecosystem. Also called a food cycle.
ingestion	*noun*	the act of eating or consuming.
pollutant	*noun*	chemical or other substance that harms a natural resource.
primary consumer	*noun*	organism that eats producers; herbivores.
primary producer	*noun*	organisms, such as plants and phytoplankton, that can produce their own food through photosynthesis or chemosynthesis; also called autotrophs.
producer	*noun*	organism on the food chain that can produce its own energy and nutrients. Also called an autotroph.
secondary consumer	*noun*	organism that eats meat.
tertiary consumer	*noun*	carnivore that mostly eats other carnivores.
toxin	*noun*	poisonous substance, usually one produced by a living organism.
trophic level	*noun*	one of three positions on the food chain: autotrophs (first), herbivores (second), and carnivores and omnivores (third).