

Ghastly Ghost Fishing: Effects on Humpback Whales

Author Jess Garner
Grade Level 5
Duration 6 class periods

National Standards

GEOGRAPHY

Element 1: The World in Spatial Terms

1. How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information

Element 5: Environment and Society

14. How human actions modify the physical environment

Element 6: The Uses of Geography

18. How to apply geography to interpret the present and plan for the future

SCIENCE

ENGINEERING

3-5ETS1-2 Generate and compare multiple solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

AZ Standards

ELA

Reading:

Key Ideas and Details

5.RI.2 Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text

5.RI.3 Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text, based on specific information in the text

Craft and Structure

5.RI.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area

Integration of Knowledge and Ideas

5.RI.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably

WRITING

Production and Distribution of Writing

5.W.4 Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience.

MATHEMATICS

Measurement and Data

5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step, real-world problems.

Number and Operations in Base Ten

5.NBT.B.6 Apply and extend understanding of division to find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors

Mathematical Practice

5.MP.1 Make sense of problems and persevere in solving them.

SCIENCE

Life Science

5.L4U3.11 Obtain, evaluate, and communicate evidence about how natural and human-caused changes to habitats or climate can impact populations.

Arizona Social Science Standards

GEOGRAPHY

Human-environment interactions are essential aspects of human life in all societies.

5.G2.1 Describe how natural and human-caused changes to habitats or climate can impact our world.

Global interconnections and spatial patterns are a necessary part of geographic reasoning.

5.G4.1 Describe how economic activities, natural phenomena, and human-made events in one place or region are impacted by interactions with nearby and distant places or regions.

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SIOP Elements		
Preparation Adapting content Linking to background Linking to past learning Strategies used	Scaffolding Modeling Guided practice Independent practice Comprehensible input	Grouping Option Whole class Small groups Partners Independent
Integrating Processes Reading Writing Speaking Listening	Application Hands on Meaningful Linked to objectives Promotes engagement	Assessment Individual Group Written Oral

Arizona English Language Proficiency Standards

Grade 4 and 5

Basic

Listening and Reading

Standard 1 By the end of each language proficiency level, an English learner can construct meaning from oral presentations and literary and informational text through grade appropriate listening, reading, and viewing.

B-1: determine the central idea (in informational text) and theme (in literary text) and explain how they are supported by key details.

B-2: recount a text including specific details and information.

Standard 2 By the end of each language proficiency level, an English learner can determine the meaning of words and phrases in oral presentations and literary and informational text.

B-1: determine the meaning of frequently occurring academic and content-specific words and phrases.

Speaking and Writing

Standard 3 By the end of each language proficiency level, an English learner can speak and write about grade appropriate complex literary and informational texts and topics.

B-3 compose informational text that includes details to develop a topic while using appropriate conventions.

B-5: use examples of precise language and domain-specific vocabulary within informative texts.

Listening, Speaking, Reading, and Writing

Standard 6 By the end of each language proficiency level, an English learner can participate in grade-appropriate oral and written exchanges of information, ideas, and analyses, responding to peer, audience, or reader comments and questions.

Standard 8 By the end of each language proficiency level, an English learner can analyze and critique the arguments of others orally and in writing.

B-4: write about an opinion and use provided resources to include one or more supporting reasons.

Overview

Humpback whales are incredible, well-researched creatures. Students living near or visiting near the ocean may have the actual opportunity to see the whales. But all students have the opportunity to learn about their anatomy, their habits, and how these giant animals are endangered by the actions of humans.

Purpose

In this lesson, students will conduct research on humpback whales using a variety of skills and strategies. Their research will help them glean knowledge to solve the problem of ghost fishing, write knowledgeably using a variety of sources, utilize math concepts in converting between measurements, and support opinions with evidence from a text. They will also learn about the unique anatomy and the migration patterns of the humpback whale. This lesson contains adaptations for diverse learners (ELLs).

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Key Vocabulary

altruism: feelings and behaviors that show a desire to help others

countershading: a color pattern found in many species of whales and dolphins that helps protect them from predators

dorsal fin: the fin along the midline of the back of most whales, dolphins, and porpoises

breaching: leaping out of the water

flukes: the flat horizontal lobes that form the tail of all whale and dolphin species

pleats: folds along throat and under the mouth of baleen whales that expand as they gulp in food and water

migration: regular journeys of animals between one region and another

ghost fishing: lost, discarded, or abandoned fishing gear that continues to trap animals and fish

Materials

- Ghostly Ghost Fishing PowerPoint
- Computer, projection device, internet
- Vocabulary Pre and Posttest and Answer Key
- Vocabulary Cards
- Humpback Whale article
<https://wwhandbook.iwc.int/en/species/humpback-whale> (within this article there is a 1-page summary that can be downloaded and used <https://s3-eu-west-1.amazonaws.com/wwhandbook/files/Humpback-whale-A4-fact-sheet.pdf>)
- Blue, red, and green colored pencils or highlighters
- Notebook or notetaking paper
- Example of a completed tree map on humpback whale
- Humpback Whale Migration Patterns worksheet and Answer Key
- Humpback Whale Math worksheet and Answer Key
- What is Ghost Fishing and Why Should We Care? worksheet and Answer Key
- Ghost Fishing is Killing Coastal Wildlife!
<https://www.savecoastalwildlife.org/stop-ghost-fishing>
- Engineering Design Process worksheet
- Large paper or poster board, art supplies
- Big Book Page Scoring Guide.
- Ghost Fishing Solution Discussion

Objectives

The student will be able to:

- Define grade level vocabulary words.
- Use sources to find key ideas and details.
- Organize key ideas and details.
- Use a map to communicate information.
- Develop an argument.
- Generate and describe at least one solution to a problem.

Procedures

Prior to the Lesson: Construct word wall using the vocabulary words included in this lesson or use Padlet <https://padlet.com/>

Display the color code on the board.

- green for anatomy
- blue for behavior
- red for key ideas

Print off or project the information on Humpback Whale found at:

<https://wwhandbook.iwc.int/en/species/humpback-whale>

Decide to use complete article or one page summary found at:

<https://s3-eu-west-1.amazonaws.com/wwhandbook/files/Humpback-whale-A4-fact-sheet.pdf>

SESSION ONE

1. Begin the session by projecting slides 1-2. Read slide 2 and discuss the kinds of animals mentioned and the fact that they are all traveling somewhere.
2. Project slide 3. Have students do a quick write putting down their thoughts on this question: Do animals have the capacity for kindness?
(Preparation: Linking to background; Grouping Option: Whole group; Integrating Processes: Writing)
3. Project slide 4 and play the YouTube video Haunting Song of Humpback Whales (.42 min) <https://www.youtube.com/watch?v=W5Trznr92c> without showing the image of the whale. Have students guess the animal. The slide will transition to the image of a whale with another click after the students have guessed.
(Preparation: Linking to background; Grouping Option: Whole group; Integrating Processes: Writing, Listening)
4. Project slides 5-6.
5. Return to the question: Do animals have the capacity for kindness?" Have students share their ideas. **(Integrating Processes: Speaking, Listening)**
6. Project slide 7, Vocabulary Pretest. Explain that this lesson will have new words for them to learn and use. Have students use notebook paper and match the definition to the words. Share correct

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answers. Add Vocabulary Cards to Word Wall.

(Preparation: Linking to past knowledge; Scaffolding: Comprehensible input)

- Now explain that know more about humpback whales, they will be reading some information about them from the International Whaling Commission. Project slide 8. As they are reading, they should be underlining their copy of the information using the color code on the board. Explain that green will be used for parts of the whale's body. Blue will be used to describe the whale's behavior. And red will be any other key ideas that would be important for everyone to know.
- Distribute color pencils or highlighters and copies of the material that will be read. Use either or both links on slide. Read aloud the information and explaining any images in the readings. **(Integrated Processes: Reading, Listening, Writing; Application: Hands on; Grouping Option: Whole group)**

SESSION TWO

- Have students return to their color-coded reading from last session. Project slide 9. Distribute blank paper and have students work in partners to take their color-coded reading and now make the tree map. **(Integrated Processes: Reading, Listening, Writing; Grouping Option: Partners)**
- Project slide 10. Watch the YouTube video about humpback whale altruism: Humpback Whales to the Rescue <https://www.youtube.com/watch?v=Tpc71bHDNp0> (3.30 min) **(Application: Promotes engagement)** Discuss the possible reasons the narrator gives for whales protecting other animals.
- Project slide 11 and play the interview with Nan Hauser who was rescued from tiger sharks by a humpback whale. How a Whale Saved a Marine Biologist from a Shark (5 min) <https://www.npr.org/2018/01/12/577713381/how-a-whale-saved-a-marine-biologist-from-a-shark> Discuss her adventure and her thoughts on altruism. **(Application: Promotes engagement; Grouping Option: Whole group; Integrating Processes: Listening, Speaking)**

SESSION THREE

- Project slide 12 and click on the link to the world map found at <https://geology.com/world/world-map.shtml> Ask students if they remember where humpback whales can be found. Review the vocabulary word migrate. Why do whales migrate?

- Distribute the Humpback Whale Migration Patterns worksheet. Have students look at the projected world map and have students label the 5 oceans on their copy of the map. (Arctic, Southern, Pacific, Atlantic, Indian Oceans) Have students complete the map portion of this session.
- Distribute the Humpback Whale Math worksheet. Read the facts about humpback whales and explain how students will solve the math problems linked to real world applications. **(Application: Linked to objectives, Grouping Options: Individual)**

SESSION FOUR

- Distribute the What is Ghost Fishing and Why Should We Care? Worksheet. Project slide 13 and read Ghost Fishing is Killing Coastal Wildlife! <https://www.savecoastalwildlife.org/stop-ghost-fishing> Complete the worksheet as a class or as individuals. **(Application: Linked to objectives, Grouping Options: Independent or Group, Integrating Processes: Listening, Reading, Writing)**
- Project slide 14 and review the Engineering Design Process. Note that the focus will be on the first three steps in the design process for the purposes of this lesson. **(Preparation: Linking to past knowledge; Application: Linked to objectives, Comprehensible input)**
- Distribute the Engineering Design Process worksheet. Project slide 15. Explain that they will be working on a Big Book about solutions to a problem. Allow students to work in small groups or as an individual to identify one problem associated with ghost fishing and then explore the solutions.

SESSION FIVE

- Have students share their problems and possible solutions found by their exploration with the whole class.
- Project slides 16. Explain that each group or individual should construct their Big Book page following the given format on slide 17. Explain how the page will be graded.
- Distribute large paper or posterboard and art supplies. Take students to computer lab or have them use their own computers. Allow time to create a Big Book page. **(Grouping Option: Small groups; Application: Linked to objectives; Scaffolding: Comprehensible input; Integrated Processes: Reading, Writing, Speaking, Listening)**

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SESSION SIX

21. Distribute the Ghost Fishing Solution Discussion worksheet. Project slide 17. Explain that they will be creating an argument. They will be working with a partner that was not in their group. First, they will be explaining to their partner their solution with the first 3 sentence stems. Then they will trade papers. their partner (not someone from their group) will be responding by filling out 4-5. Remind students of classroom etiquette. Monitor groups to make sure and correct student responses if needed.
**(Grouping Option: Small groups;
Application: Linked to objectives; Integrated Processes: Reading, Writing, Speaking, Listening)**
22. Project slide 18 or distribute the Vocabulary Test and administer as a posttest.

Assessment

Geography, ELA, and Science

Humpback Whale Migration Patterns worksheet can be scored using the point system given on the worksheet. Mastery will be considered a score of 80% or higher.

What is Ghost Fishing and Why Should We Care? worksheet can be scored using the point system given on the worksheet. Mastery will be considered a score of 80% or higher.

The Vocabulary Test can be given to measure language acquisition. Mastery will be considered a score of 80% or higher.

Big Book page can be graded for completeness and accuracy using the Big Book Page Scoring Guide. Mastery will be considered a score of 56 points or higher.

Geography, Math, and Science

Humpback Whale Math worksheet can be graded for completeness and accurate answers. Mastery will be considered a score of 80% or higher.
(Assessments: Written, Individual, Group)

Extensions

Have student identify behaviors around school that show altruism. Perhaps have students design a “reward” or “award” for such behavior.

Conduct a Socratic seminar on another issue that affects marine life.

Sources

Information on Humpback Whales

<https://www.nature.com/articles/news.2010.532>

<https://www.fisheries.noaa.gov/species/humpback-whale>

<https://wwhandbook.iwc.int/en/downloadable-resources/glossary-of-ww-terms>

<https://oceanservice.noaa.gov/facts/ghostfishing.htm>

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<https://www.fisheries.noaa.gov/species/humpback-whale>

<https://www.npr.org/2018/01/12/577713381/how-a-whale-saved-a-marine-biologist-from-a-shark>

<https://www.youtube.com/watch?v=Tpc71bHDNp0>

<https://www.npr.org/2018/01/12/577713381/how-a-whale-saved-a-marine-biologist-from-a-shark>

<https://www.savecoastalwildlife.org/stop-ghost-fishing>

Information on Word Walls

https://www.readingrockets.org/strategies/word_wall#:~:text=A%20word%20wall%20is%20a,used%20uring%20writing%20and%20reading

Padlet

<https://padlet.com/>

Information on Thinking Maps

<https://www.thinkingmaps.com/why-thinking-maps-2/>

Conversion Chart

<https://www.mathsisfun.com/metric-imperial-conversion-charts.html>

World Map

<https://geology.com/world/world-map.shtml>

Digital Templates

<https://avidopenaccess.org/resource/digital-templates/>

Engineering Design Process

<https://theworks.org/educators-and-groups/elementary-engineering-resources/engineering-design-process/>