

A Teacher's Guide for

THE NEPTUNE PROJECT

BY POLLY
HOLYOKE

Texas Bluebonnet Master List 2014-1015

Disney·HYPERION

This content was developed by Laney Nielson and Polly Holyoke with design by Erin Tillett.

This guide is aligned with STAAR requirements.
Specific objectives are listed at the end of the document.

ABOUT THE AUTHOR AND THE BOOK

About the Book



Nere has never understood why she feels so much more comfortable and confident in water than on land, but everything falls into place when Nere learns that she is one of a group of kids who-unbeknownst to them-have been genetically altered to survive in the ocean. These products of "The Neptune Project" will be able to build a better future under the sea, safe from the barren country's famines, wars, and harsh laws. But there are some very big problems: no one asked Nere if she wanted to be a science experiment, the other Neptune kids aren't exactly the friendliest bunch, and in order to reach the safe haven of the Neptune colony, Nere and her fellow mutants must swim through hundreds of miles of dangerous waters, relying only on their wits, dolphins, and each other to evade terrifying undersea creatures and a government that will stop at nothing to capture the Neptune kids...dead or alive. Fierce battles and daring escapes abound as Nere and her friends race to safety in this action-packed aquatic adventure.

About the Author

Polly Holyoke grew up in Colorado where she spent her childhood skiing, camping, reading and dreaming up fantastical stories. She went on to graduate from Middlebury College and became a middle school social studies teacher. She lives in Plano, Texas with her family, as well as two cats, two Chihuahuas and a beagle. For more information visit:
<http://www.pollyholyoke.com>.



PRE-READING ACTIVITIES

Building Background Knowledge/Connecting to Nonfiction

Most of *The Neptune Project* is set in the ocean. Give students an opportunity to immerse themselves in that setting by doing a “Content Pass” on ocean life. Gather a collection of nonfiction trade books, printed articles and websites. See Additional Resources below. Using the “Content Pass” worksheet (see printables), give student 3-5 minutes to survey the resource, record two facts and one question. When time is up, students pass the resource to the nearest student or move to the computer station. After 15-20 minutes, each student will share one interesting fact they have learned. Create a list of questions for further independent research. This activity could also be done with the topic of climate change.

Introducing the Genre

The Neptune Project is a work of fiction that falls within the tradition of dystopian literature. Introduce the term, “Dystopia” and its antonym, “Utopia.” Have students generate a list of other dystopian novels they have read. Display a selection of dystopian (teacher approved) novels in your classroom. As students begin to read *The Neptune Project*, post a large sheet of paper where students can record evidence from the text that they have entered a dystopian world (examples: curfew, crackdown, Western Collective, secret police, locator chip, work camp, illegal technology etc.).

Making Predictions

Using the cover art and the title, ask students to make predictions about the book’s genre, setting, characters and problem. Record student responses and refer back to them after Chapter One is read and later, as the story unfolds. Ask students who Neptune was and what feelings are conjured up when they hear the word, “project.” Have they ever been involved in a project? Was it a positive or negative experience?



Monitor Predictions

Have students look back at their initial predictions and discuss the direction the book is now heading. In what ways are students surprised? Have any of their predictions been confirmed?

Freeze Frame

Working in small groups, students will review a chapter to determine the most important event in that section. Using all the students in each group, students will create a frozen scene of the event. Groups will take turns presenting while their classmates will guess which event is being depicted. Referring back to the book is encouraged. This activity could also be completed by making a video. Alternatively, students may create a mural of an event and other students will guess which scene it is from.

“Fluency Idol”

On Monday, have students pick a passage from *The Neptune Project* they would like to perform. Students should practice the passage all week, giving careful attention to accuracy, expression and appropriate phrasing. On Friday, students will perform their passages in front of the class. Try this with five different books from the 2014-2015 Texas Bluebonnet Master List. Some suggested passages from *The Neptune Project*: p. 3 opening paragraph of the novel, p. 66 the last two paragraphs of chapter nine, p. 273 (bottom paragraph) or p. 274, but students can also select their own. Students can complete this activity by making videos.

Analyzing Characters

Students complete the character chart provided in the printables section by providing evidence from the text to support their claims. This can be extended into a short writing assignment.

Compare and Contrast Characters

Using the interactive Venn Diagram on the ReadWriteThink website, <http://www.readwritethink.org> or a paper diagram. Have students compare two characters. Possible pairs to include are: Nere and Kyel, Nere and Dai, Nere and Lena, Nere and Tobin or Tobin and Dai.



Searching for Similes

The Neptune Project is full of sensory details and similes that keep the reader fully immersed in its setting. Share the following examples:

My mind feels like it's full of sea sludge (page 76).

My stomach starts twining and twisting like an octopus (page 196).

When I surface, I see at once that the *Kestrel* is gone, and my heart sinks like an anchor (page 225).

Ask students what the author is comparing in each simile. Have students decide whether or not the simile enhances their understanding. Challenge students to find and record similes as they read. You may want to post a large sheet of paper where student can record and share similes or students can keep individual recording sheets of similes. Challenge students to find 10 similes in *The Neptune Project*. Can they find more? (See Printables)

Nonfiction Connections

As student read *The Neptune Project*, they will be introduced to the biological diversity of the oceans. Create a classroom alphabet book of marine life or an illustrated dictionary. This can be done on the computer or with paper. Each student or pair of students will research and write about a different species or aspect of marine life. Possible topics are listed alphabetically below:

The Neptune Project: Marine Life from A to Z

A- Abyssal Plain, Anemones, Algae

B- Barnacles, Bat Rays

C- Coral, Crabs, Continental Shelf

D- Dolphins, Dead Zone

E- Eels, Echolocation

F- Fish such as Sheepshead, Fans (sea fans)

G- Giant Squid, Grouper

H- Humpback Whales, Hydroids

I-

J- Jelly Fish

K- Kelp Forest

L- Lobsters, Lionfish

M- Marine Compass, Mako Shark

N- Nudibranch

O- Oysters, Octopus, Otters (sea)

P- Phytoplankton

Q-

R- Rock Wrasse

S- Scallops, Sharks, Sponges, Sardines,
Sea Lions, starfish

T- Turtle (sea)

U- Urchins (sea urchins)

V- Vents (Ocean Vents)

W- Wrecks (Shipwrecks), Wasp (sea)

X-

Y- Yellow Fin Tuna

Z- Zebra Perch

AFTER READING ACTIVITIES

Map Project

Using a map of the coastline of California, create a map that locates and follows the setting of *The Neptune Project*. Students should use the cities of Los Angeles and San Francisco to help them determine where fictional places might be located. Places to include: Goleta, the Channel Islands, Santero, Tyler's Cove, Safety Harbor, North Cove, Santa Cruz Island, San Diego, the drowned city of Los Angeles, Southern Sector, Northern Sector, the wreck of the freighter *Alicante*, Oxney Harbor, Continental Shelf and San Francisco.

Sequencing Activity

Have students create a board game that includes the proper sequence of events as the Neptune Project kids make their way to Safety Harbor. The main characters can be the playing pieces and a wild card pile should include additional obstacles faced such as sharks, fishing nets, Marine Guard boats, depth charges, jelly fish swarms and giant squid.

Design a propaganda poster for The Western Collective

Point of View Letter Writing Project

Write a letter from...

- Gillian to Nere about the goals of the Neptune Project and why Gillian wanted her children to be a part of it.
- Nere to her mother.
- Cam to his younger brother Robry or Robry to Cam.
- Nere to her father or from Dr. Hanson to his daughter.

The Neptune Project Survival Guide

Have students imagine they are kids from the Neptune Project who have made it to Safety Harbor. They have been tasked with creating an informative survival guide for other Neptune Project kids who are just starting their journey. What information would be essential to include? How will the information be conveyed? Possible final products might include an illustrated pamphlet, a recording or an instructional video. Challenge: can students design a waterproof guide or a way to transmit the information effectively?

Creating A Character's Backstory

Authors should know their secondary characters' backstories. Many of the characters in *The Neptune Project* besides Nere have complex and interesting backgrounds. Write a chapter about a secondary character's backstory and adventures before the book begins.

DISCUSSION QUESTIONS



Chapters 1-11

1. In the opening chapters, Nere exhibits physical limitations on land. What are those limitations? How do those limitations affect how Nere views herself? What physical strengths and mental skills does Nere possess? How do Nere's physical strengths and weaknesses shape your initial view of Nere?
2. What clues does the author give you that the setting of *The Neptune Project* is very different from the United States of today? Find a specific example in the text. What mood is the author creating?
3. Why do you think Cam is willing to help rescue the smugglers? Why might Nere be willing to help? Given the circumstances, would you? Why or why not?
4. In Chapter 3, Nere says she wishes she and her mother weren't so awkward together. How is Nere and Gillian's relationship depicted as awkward?
5. How will the government edict impact Nere's life?
6. How do Nere, Lena and Robry each react to the knowledge that they have been genetically modified?
7. Do you think Gillian was right to keep the project a secret from Nere? Do you sympathize with Nere's anger toward her mother?

Chapters 12-29

1. Describe Nere's relationship with the dolphins. Do any of the dolphins provide emotional support to Nere as well as physical protection?
2. What is Nere's initial impression of Dai and how does that impression change or deepen over time?
3. Why is there tension between Nere and Kyel? How would you describe Kyel's leadership style? Do you think Kyel is a good leader?
4. Which characters are the strongest telepaths? Which characters are the weakest telepaths? Nere's telepathy is so strong she can break through other people's mental shields and read their thoughts. So can Dai. Do you think this is a positive or negative ability? If you could be telepathic, would you? Why or why not?
5. Reread the exchange between Nere and Dai on pages 120-121. What is Dai's attitude toward the dolphins and the ocean? What is Nere's? Whom do you agree with?
6. Why do you think Nere finds Tobin calming to be around? Why is Dai so unsettling to Nere?
7. What qualities does Nere appreciate about Thom? About Tobin? Why is Nere glad they met up with Thom and Tobin?
8. On page 164, Tobin says to Nere, "You and Dai, it's like you've lived in the sea all your life. Most of us are scared out of our minds, but you look like you were meant to be here." What do you think about Tobin's observation?

DISCUSSION QUESTIONS



9. At the end of Chapter 22, there is a debate over whether or not the Neptune kids should risk burying Sara on land. On page 166, Robry says, "I think we're really arguing about how we're going to live down here." What does Robry mean by this? Do you think there are certain norms and rules a group of people must abide by? If so, what are they? Is marking the passing of human life one of them?
10. When Nere goes ashore to bury Sara, she must face the truth that she will never be at home on land again. How does this realization impact her? How does this raise the stakes?
11. Before her life in the ocean, Nere felt invisible. Now she begins to feel important to the group. How does that make her feel?
12. What is the mission of the Neptune Project?
13. In Chapter 26, Nere compares the fanatical light in Kyel's eyes to the way Gillian once looked talking about the Neptune Project. What does it mean to be fanatical about something? What was Gillian fanatical about? What is Kyel fanatical about? What are the pros and cons of fanaticism?
14. Dai tells Nere that she can ask him five questions about himself. If you could ask questions of one of the characters in *The Neptune Project*, whom would it be? What five questions would you ask?
15. James refers to himself as a "flawed prototype." How does his failed Neptune transformation isolate him from others? How does his ability to be a "controller" isolate him further?
16. Why do you think Nere is so reluctant to become the leader of the group? Why does she finally accept that position? What qualities make her a good leader?
17. When Kyel is dying, he says to Nere, "I wanted to fight the Western Collective until the day I died. Now that's here and everything I did and all the friends I lost, we didn't change anything. Maybe the best way to beat them is to survive and build something more free and fair in the sea." Do you agree or disagree with Kyel's statement? Can you think of a time in your own life or in history when this was true?

Chapters 30-42

1. Give an example of a time when Nere feels the weight of being the leader.
2. Would you allow Penn to stay with the group? How would you vote? Why?
3. Do you think the survival of the group is more important than an individual's particular desire or need? What qualities make someone a valuable member? What qualities are undesirable?
4. The dolphins play a key role in the survival of the Neptune Project kids. Throughout the book, the dolphins show themselves to be highly intelligent animals. Do you think dolphins are capable of thinking? Do you think your pet thinks? Are animals of higher intelligence of more value? Why do you feel that way?
5. In Chapter 32, Lena reveals to Nere why she stopped being Nere's friend. In light of this new information, how does Nere feel about Lena? Does this insight change your view of Lena's attitude and behavior earlier in the book?

DISCUSSION QUESTIONS



6. In addition to the external conflicts Nere faces, she also battles internal conflicts. What do you think those conflicts are? Give an example of Nere overcoming an internal conflict.
7. What clues does the author give you that Dai might have a secret he is not sharing? How does that feeling build in Chapter 39?
8. In Chapter 40, Nere and the others encounter Wasp who says she and her mutant gang are not afraid of dying. How does this encounter change the mood? How does one deal with an antagonist who claims to have no fear of death?
9. Why do you think Dai deceived the group? Do you find him a sympathetic character or do you also feel betrayed by his actions?
10. When Nere is reunited with her father, he says, "I'm glad you're finally here, but I think my little girl has grown up a great deal in the past two years (page 341). How do you think Nere has grown during the course of this story? Where do you think her story will go next?"



Exploring Human Anatomy

Either as a whole class or in small groups, discuss what parts of Nere and her companions' anatomy had to be altered by their scientist parents to make it possible for them to survive in the ocean. Specifically, how would their eyes, lungs, sweat glands and blood need to change?

Answers

Eyes: their pupils need to dilate further to absorb more light beneath the surface of the sea.

Lungs: they were lined with gill filaments to make it possible for them to absorb oxygen from water.

Sweat glands/metabolism: they were made to be more efficient to save heat which is far more easily lost in water.

Blood: theirs was changed to hold higher amounts of oxygen.

Follow up activity: students should work in small groups or independently to research the following:

- How would humans need to adapt to live on a planet with lower gravity than ours?
- How would humans need to adapt to live on a planet with stronger gravity than ours?
- How have humans actually evolved and their anatomy changed to live in very hot desert climates?
- How have humans adapted to live in cold places like the Arctic?

Once research is complete, students should determine how best to present their findings. They could create a small-scale model or use an outline of the human body to draw and label the adaptations.

Resources:

<http://www.sciencekids.co.nz/videos/humanbody.html>

<http://science.nationalgeographic.com/science/health-and-human-body/human-body/>

<http://kids.britannica.com/comptons/article-230208/anthropology>



Exploring Measurements (can be done in metric or imperial systems)

Have students research the length of the following species that are mentioned in *The Neptune Project*: an adult sea otter, an adult Pacific white-sided dolphin, a great white shark, a giant squid, and an adult humpback whale.

Students should make a table to organize the data and then decide how best to display the information. Students might create a bar graph or another visual. They could also use a long space such as a school gym or hallway to measure out and compare the lengths of animals. Using sticky notes and possibly string, students will mark and label the measurements.

Follow up math activities:

How many sea otters would you have to line up to from toe to tail to equal the length of a giant squid?

How many Pacific white-sided dolphins would it take to equal the length of a humpback whale?

Humpback whales aren't the largest species of whale. What is, and how much longer is this whale than a humpback?

Geographical Features in the Ocean

As Nere and her companions travel up the coast of the Western Collective (including present day California, Oregon and Washington) they encounter a variety of geographical features under the waves. The ocean floor is a fascinating and complex place, full of rugged mountains, winding canyons and wide plateaus. Create a model of a particular area of the ocean floor with clay or using recycled materials.

<http://legacy.mos.org/oceans/planet/features.html>



Exploring Marine Taxonomy

Many fascinating marine species are mentioned in *The Neptune Project* from different kingdoms and phylum. Classify at least three of the following creatures: coral, sharks, spiny lobsters, green sea turtles, Pacific white-sided dolphins, sea urchins, humpback whales, sea otters, bat rays.

Students should create a table with the following categories:

Kingdom	Phylum	Class	Order	Family	Picture
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Note: there is a detailed table for this activity filled out for students in the Printables section. This activity is complicated, but it is a great way to start introducing the concept and common terms in taxonomy to younger students.

For an overview on taxonomy and scientific classification, watch the video at: <http://marinebio.org/oceans/marine-taxonomy.asp>.

Marine Biology Card

Students can create trading cards on the different marine species mentioned in *The Neptune Project*. Each card should have the picture of the animal on the front and then on the back facts about where it is found, its predators and its prey. Special adaptations and other interesting facts should also be listed.



Echolocation Activity

Echolocating, or the ability to locate objects through reading reflected sound waves, is one of the coolest of dolphins' many amazing abilities. Dolphins create and project high-pitched sounds or "clicks" and then read the reflection of those sound waves to learn about the terrain around them and to find their prey in the dark sea. You can try echolocating, too. Have you ever played the game Marco Polo in a pool? That's essentially a human form of echolocating!

Here's a way to try it on land. Choose one person to be a dolphin, several people to be obstacles like rocks and reefs, and one person to be the tasty squid the dolphin wants to have for lunch. Before you start, the dolphin and the obstacles should practice making loud clicks. The squid needs to make its own unique sound. A high pitched "squeee" works nicely (even though squid do not make sounds – the "squeee" sound represents the squid's echolocation signature). Blindfold the dolphin and have the obstacle people scatter along a path between the dolphin and the squid. Every time the dolphin makes a clicking sound, the obstacles click in response. The squid, however, should be consistent in making its own unique sound. By listening to the clicks and sounds that return to it, the dolphin should be able to navigate its way straight to the squid without using its sight or touching anyone.

Organize a Neptune Project/SOS:Save Our Seas Day

After a class/grade/division reads *The Neptune Project*, consider organizing a special environmental day at your school. You can invite a speaker to come from NOAA, or from an environmental charity such as Oceana or the Ocean Conservancy. Your school community could watch a film about the sea or climate change, and then actually clean up a nearby beach, stream or lake. A class could sponsor a recycling project to raise awareness of the dangers plastic bottles and bags pose to marine life. Go to: <http://texasbluebonnetaward2015.wordpress.com/neptune-project/> for a list of fun marine crafts younger students could complete.



Research Project: A Closer Look at Dolphins or Octopus

Two of the most complex, intelligent and interesting species in *The Neptune Project* are dolphins and octopus. Students should decide which species they would like to learn more about and then generate a list of questions they are interested in answering. In addition to those questions, students should find the following information...

Animal's Scientific Name:

Family:

Habitat:

Diet:

Predators:

Prey:

Typical Weight and Size:

3-5 Interesting Facts:

Lifespan:

To begin research on octopus, check out:

<https://www.montereybayaquarium.org/animal-guide/octopus-and-kin>

To begin research on dolphins, check out:

<http://www.montereybayaquarium.org/animal-guide/marine-mammals/common-dolphin>

Final products might include a virtual poster made using Glogster:

<http://edu.glogster.com/what-is-glogster-edu/>

Or a presentation using Prezi:

<http://prezi.com/prezi-for-education/>



Internet Workshop on Climate Change

Pairs of students will explore and research different aspects of Global Climate Change. Students will become experts on that topic. Once their research is complete, students will present their findings to the class. Although additional sites may be utilized, this workshop uses the following site:

“A Student’s Guide to Global Climate Change”

<http://epa.gov/climatestudents/>

Topics for Research:

The difference between weather and climate

The effect of rising global temperatures

The Greenhouse Effect

Carbon Dioxide

Natural factors that changed Earth’s climate in the past

The signs of climate change

The effect of global climate change on people and the environment

Clues of climate change

Technologies that reduce global climate change

Simple steps humans can take to reduce global climate change

Preparing for the future

Additional Resources for Climate Change Activities and Research

View an interactive map to see how global warming may impact freshwater resources, ecosystems, food and forests, coastal areas, industry and society and human health.

<http://environment.nationalgeographic.com/environment/global-warming/gw-impacts-interactive/>

Read a very good summary of how climate change is affecting wildlife and wetlands in the US and what YOU can do to help prevent rising global temperatures. <http://www.youtube.com/watch?v=drINEQFXbPY>



Additional Resources for Nonfiction

MARINE LIFE

Check out the NSTA National Science Teachers Association's lists of Outstanding Science Trade Books for Students K–12. Every year books on Marine Life are honored.

<http://www.nsta.org/publications/ostb/>

NOAA National Oceanic and Atmospheric Administration Education Resource

<http://www.education.noaa.gov>

Scholastic.com Teachers: Ocean Life Books and Resources

<http://www.scholastic.com/teachers/lesson-plan/ocean-life-books-and-resources>

National Geographic

<http://ocean.nationalgeographic.com/ocean/ocean-life/>

CLIMATE CHANGE

"A Student's Guide to Global Climate Change"

<http://epa.gov/climatestudents/>

Columbia University Teacher's College Reading and Writing Project Digital Nonfiction Text Sets

<http://readingandwritingproject.com/resources/book-lists-classroom-libraries-and-text-sets-for-students/text-sets.html>. You will find Global Warming in the Science-Health section.

***All Printables found in a separate file on the website**

Note: I would like to say a special thank you to Dawn Diamond, a wonderful Canadian teacher who shared many of her creative ideas on using *The Neptune Project* for cross-curriculum teaching.

FOR TEXAS TEACHERS: ALIGNMENT WITH STAAR REQUIREMENTS

These activities and discussion questions are aligned with the following English Language Arts and Reading Texas Essential Knowledge and Skills (TEKS): (1) Reading/Fluency. Students read grade level text with fluency and comprehension. Students are expected to read aloud grade-level stories with fluency (rate, accuracy, expression, appropriate phrasing) and comprehension. (2) Reading/Vocabulary Development. Students understand new vocabulary and use it when reading and writing. (6) Reading/Comprehension of Literary Text/Fiction. Students understand, make inferences and draw conclusion about the structure and elements of fiction and provide evidence from the text to support their understanding. Students are expected to: Grades 3 & 4: (A) sequence and summarize the plot's main events and explain their influence on future events; (B) describe the interaction of characters including the relationships and the changes they undergo; Grade 5: (A) describe incidents that advance the story or novel, explaining how each incident gives rise to or foreshadows future events; (B) explain the roles and function of characters in various plots, including their relationships and conflicts; (8) Reading/Comprehension of Literary Text/Sensory Language. Students understand, make inferences and draw conclusions about how an author's sensory language creates imagery in literary text and provide evidence from the text to support their understanding. Students are expected to identify the author's use of similes and metaphors to produce imagery. Grade 5: Students are expected to evaluate the impact of sensory details, imagery and figurative language in literary text. (11) Reading/Comprehension of Informational/Expository Text. Students analyze, make inferences and draw conclusions about expository text and provide evidence from text to support their understanding. Students are expected to: Grade 4: (A) summarize the main idea and supporting details in text in ways that maintain meaning; (B) distinguish fact from opinion in a text and explain how to verify what is a fact; (C) describe explicit and implicit relationships among ideas in texts organized by cause-and-effect, sequence or comparison and (D) use multiple text features to gain an overview of the contents of text and to locate information. Grade 5: (A) summarize the main idea and supporting details in text in ways that maintain meaning and logical order; (B) determine the facts in text and verify them through established methods; (D) use multiple text features to gain an overview of the contents of text and to locate information and synthesize and make logical connections between ideas within a text and across two or three texts representing similar or different genres. (15) Writing/Writing Process. Students use elements of the writing process to compose text. (18) Writing/Expository and Procedural Texts. Students write expository and procedural or work-related texts to communicate ideas and information to specific audiences for specific purposes. Students are expected to: Grade 4: (A) create brief compositions that: (i) establish a central idea in a topic sentence; (ii) include supporting sentences with simple facts, details and explanations and; (iii) contain a concluding statement (B) write letters whose language is tailored to the audience and purpose and that use appropriate conventions and; (C) write responses to literary or expository texts and provide evidence from the text to demonstrate understanding. Grade 5(B) write formal and informal letters that convey ideas, include important information, demonstrate a sense of closure and use appropriate conventions. (C) Write responses to literary or expository texts and provide evidence from the text to demonstrate understanding. (23) Research/Research Plan. Students ask open-ended research questions and develop a plan for answering them. Grade 6 110.18 English Language Arts and Reading: Reading/Comprehension Skills (A) Establish purposes for reading selected texts based upon own or others' desired outcome to enhance comprehension; (B) ask literal, interpretive, evaluative and universal questions of text (C) monitor and adjust comprehension; (D) make inferences about text and use textual evidence to support understanding; (E) summarize, paraphrase and synthesize texts in ways that maintain meaning and logical order within a text and across texts; and (F) make connections between and across multiple texts of various genres and provide textual evidence.