NJSLA Research Simulation Task
Grade 8 Writing
Lesson 3: Understanding the PCR Prompt and Writing a Thesis Statement

Rationale

- NJSLA's prose constructed response (PCR) represents a significant change from previous tests' essay prompts. On the Research Simulation Task, these prompts require students to write an argumentative or informative/explanatory essay based solely on textual evidence found in the associated texts.
- For students to write proficient responses, they need to start with a strong grasp of the prompt's requirements and must be able to develop a strong thesis statement that fully addresses the prompt.

Goals

- To understand a PCR prompt
- To write a thesis statement that directly addresses all aspects of the PCR prompt

Task Foci

- **CCSS W.8.1**: Write arguments to support claims with clear reasons and relevant evidence.
- **CCSS W.8.2**: Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
- **CCSS W.8.10**: Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.
- **CCSS RI.8.1**: Cite the textual evidence that most strongly supports an analysis of what the text says explicitly as well as inferences drawn from the text.
- **CCSS RI.8.2**: Determine a central idea of a text and analyze its development over the course of the text, including its relationship to supporting ideas; provide an objective summary of the text.
- **CCSS RI.8.3**: Analyze how a text makes connections among and distinctions between individuals, ideas, or events (e.g., through comparisons, analogies, or categories).

Objectives

- Students will examine and understand the PCR prompt
- Students will write a thesis statement that specifically addresses all aspects of the PCR prompt

Materials

- Research Simulation Task texts (2)
- Research Simulation Task video link
- Research Simulation Task prompt
- Thesis worksheet

Procedures

Part 1

- Explain that today you will work as a class to understand the prompt for the prose constructed response of the NJSLA Research Simulation Task.
- Hand out the sample texts to students and have them read it independently. For this first read, they can take notes if they'd like to, but let them know that they will have the opportunity to take notes during a second reading.
- Next, present the PCR prompt to the class and hand out the PCR prompt/Thesis Statement worksheet.
- Work through the prompt as a class, asking questions such as: **What specific aspects of the text is the prompt drawing your attention to? Is it asking you to compare and contrast two ideas, people, or arguments? Is it asking you to compare how several articles treat one subject?**
- Address any questions the students might have.
- Tell your students that with this prompt in mind to re-read the text and look for details they think would help them answer the prompt. Allow time for them to read carefully and make annotations.
    - Note: Lesson 4 covers text support and evidence in depth. Students will return to their notes from this lesson for that
- In closing, have students share what they noted. To prepare them to write thesis statements, ask them how they could use their findings to answer the prompt.

Part 2

- In this part of the lesson, students will use the texts and their notes from Part 1 to construct a thesis statement to answer the prompt.
- Explain that a thesis statement is a one or two sentence claim about a given topic, in this case the topic elicited from the PCR prompt.
- Model a thesis statement.
- Ask students: **What makes a good thesis statement?**
- Give students the opportunity to share what they may already know about what makes a good thesis statement.
- Inform students that a good thesis statement:
    - answers the prompt completely
    - clearly states your position
    - is debatable (someone could argue the opposite)
    - is one or two sentences
    - can be supported by evidence from the text
- After this discussion, tell students that now they will use the texts and their notes to write their own thesis statements.
- Have students return to the Thesis Worksheet and their annotated texts and complete the assignment.
- In closing, ask students to share their thesis statements, working through any problems or challenges they encountered while writing them.

Teacher Tips

- For Part I: Circulate around the room while students are doing their second reading and taking notes. Pay attention to what passages students are underlining and if their notes are accurately capturing the information in the text.
- For Part II: Check for evidence that students are using textual support to develop their thesis statements.

Extension Activity

- Students can evaluate each other's theses for effectiveness. This can be done anonymously. Evaluating the effectiveness of others' theses will help students understand the strengths and weaknesses of their own.

Hitchhiker's Guide to the Deep

Courtesy: National Science Foundation

Deep ocean pressure poses challenges for divers and sea bottom explorers. But one organism found a way to hitch a ride to the surface without any apparent physiological challenge.

Janet Voight, a biologist at the Field Museum of Natural History in Chicago, and other scientists studying deep-ocean hydrothermal vents discovered that some life-forms can survive the extreme pressure change from ocean floor to sea surface.

On a recent dive in the deep-ocean research submersible *Alvin*, some unexpected companions--38 of them, to be exact--found their way topside.

Lepetodrilus gordensis, the invader is named. It's a type of marine snail called a limpet, well-known for its ability to stick like glue to surfaces.

"No one thought that included the gear of a submersible, however," says Voight.

The fauna at deep-sea hydrothermal vents is among the most isolated and inaccessible on Earth. Life at vents is based on a process called chemosynthesis, which, unlike photosynthesis, doesn't depend on sunlight. Rather, it survives on chemicals spewed from the vents themselves.

"Hydrothermal vents can only be visited by subsea vehicles, which can and do move freely among them," wrote Voight and colleagues in a paper published recently in the journal *Conservation Biology*. "Researchers assumed that individual animals in the vent fauna, if brought to the surface, would be killed by the change in water pressure. Clearly it's not so."

After one *Alvin* dive, Voight found the 38 vent limpets in samples taken from an undersea locale where there are no hydrothermal vents--and therefore no vent limpets.

The scientists had collected samples from a non-limpet habitat along the Juan de Fuca Ridge, deep under the surface of the northeastern Pacific Ocean. But when Voight looked at the treasure trove, it contained limpets.

"What's wrong with this picture?" she asked. "Well, that limpet species was known only from the vents of the Gorda Ridge, 635 kilometers south of Juan de Fuca."

The question became: How did the limpets get more than 600 kilometers from their habitat? "The only answer was that they must have been transported by the sub."

Which just goes to show, says Chuck Lydeard, a program director in the National Science Foundation's (NSF) Division of Environmental Biology, which funded the research, "that humans cannot assume anything about the dispersal capabilities of other organisms, including those thought to be restricted to the most extreme environments on the planet."

The inadvertent introduction of a new species to an ecosystem is a major challenge to conservation efforts. How a species will react to new surroundings, and the effect it has if it begins to reproduce and take over, is unpredictable.

"Deep-sea drilling and submersible activity can increase the probability of such introductions," says Voight, "but until now hydrothermal vents were considered too isolated to be a source of invaders."

In coastal areas, one of the biggest threats from invasive species is the introduction of diseases. Newly introduced pathogens can cause mass mortality in native species. Diseases that may exist in extreme environments such as hydrothermal vents have not been well-studied, says Voight.

"It's clearly possible to accidentally introduce a species--and any potential diseases it may carry--from a deep-sea vent to a new location," she says. "That has implications for the future exploration of hydrothermal vents. It reveals the potential risk of human-driven change to ecosystems, even those ecosystems most of us will never see."

The discovery is a valuable lesson to the scientists and vehicle operators who work in the deep sea, says Brian Midson of NSF's Division of Ocean Sciences.

"Potential cross-fertilization and contamination of hydrothermal vents and other sites need to be considered during pre and post-dive activities," says Midson. "This new information will result in future discussions between shipboard crew and research scientists about the need for rigorous cleaning and inspection of sampling gear and vehicles, before and after every dive."

The limpets Voight found hitched a ride somewhere in the sub's suction sampler, she believes, "perhaps in the corrugated hose, where enough water pooled to keep them alive.

"Replacing the corrugated hose with a smooth hose may help prevent inadvertent transplants of biota, but any surface or crevice on the submersible or its gear could provide a refuge."

The scientists urge other researchers to assume that "physiologically tough" stowaways are present on deep-sea research instruments and to guard against transport of nonnative species--from or to The Deep.

"Preventing introductions is of paramount importance," says Voight, "in maintaining intact hydrothermal vent ecosystems."

Fish aglow: Hidden colors in the sea

Courtesy: National Science Foundation

With the help of blue light and special long-pass filters, scientists have uncovered more of the undersea world's secrets. A study published in 2014 describes more than 180 species of marine fishes that glow in different colors and patterns, via a process known as biofluorescence.

Scientists already knew that some marine organisms fluoresce, including corals and jellyfish, but this is the first reported evidence of widespread biofluorescence among fishes.

"There's a whole light show going on down there, and people never see it," said one of the study's principal authors, John Sparks, a curator in the American Museum of Natural History's (AMNH) Department of Ichthyology.

The findings will surely lead to new investigations of the function of biofluorescence as well as research related to the evolution and diversification of marine fishes. They could also lead to the discovery of new fluorescent proteins useful in cancer, brain and other biomedical research.

Biofluorescence is a natural process in which organisms absorb light at one intensity, or wavelength, and emit it at a different, usually lower, level--seen as a different color. In the ocean, the researchers found, fishes absorb the higher energy blue light around them and emit it in glowing greens, reds and oranges.

Scientists made the discovery while taking and processing images of biofluorescent coral for an traveling museum exhibit. Sparks and AMNH research associate David Gruber were amazed to see, in the background of one image, an eel glowing bright green.

To further explore the phenomenon, they enlisted the help of other researchers and embarked on a series of dive expeditions. Deep underwater near the Bahamas and later the Solomon Islands, the divers shone blue lights on the ocean floor to stimulate intense biofluorescence in fishes. To see through the obliterating veil of blue light, they wore green visors over their masks and equipped their underwater camera lenses with special long-pass filters. (The researchers note that many fishes have long-pass filters in their eyes, which would allow them to see fluorescent displays.)

With the resulting images, analyses of some 12,000 specimens the team collected over four expeditions, as well as studies after hours at public aquariums, the research team discovered that biofluorescence is common throughout the tree of life for fishes. The researchers identified biofluorescence in 16 orders, 50 families, 105 genera and more than 180 species of fishes. These include the two main fish groups: cartilaginous (sharks and rays) and bony fishes (eels, lizardfishes, gobies, flatfishes).

Fish fluoresce in a wide range of patterns--from simple red/orange coloration to green eye rings to more complex, species-specific patterns of interspersed fluorescent elements on the head, jaws, fins, flank and ventrum. In some cases, the fish's entire body fluoresced, including internally. The patterns were most common and variable in fishes that had cryptic coloration, or camouflage, such as eels, gobies and lizardfishes.

The research opens the door to new studies that could yield new proteins for use in biomedical research.

"The discovery of green fluorescent protein in a hydrozoan jellyfish in the 1960s has provided a revolutionary tool for modern biologists, transforming our study of everything from the AIDS virus to the workings of the brain," said Gruber. "This study suggests that fish biofluorescence might be another rich reservoir of new fluorescent proteins."

Fluorescent proteins can be injected and used to track cellular functions, neural activity and more.

The Covert World of Fish Biofluorescence

the American Museum of Natural History on YouTube.com

Please watch the video here:

https://www.youtube.com/watch?v=aZ3EaLXh3O4

Prose Constructed Response
Prompt

You have now read two passages about marine life and watched a video about fish biofluorscence. Consider the benefits and hazards of oceanic research and deep-ocean drilling. Are the potential medical benefits worth the environmental dangers? Write an essay in which you analyze the long-term environmental and medical advantages of continued research and drilling. Include evidence from the text to support your answer.

Writing a Thesis Statement

Identify what the PCR requires

Read the prompt and identify what it is asking you to do. In the box below, write a sentence or two that describe what the prompt is asking you to write about.

What is the prompt asking?

Give it a try:

Now that you know what the prompt is asking you to do, write a thesis statement to answer the prompt.

_____

_____

_____

_____

Checklist

My thesis statement:

- ☐ answers the prompt completely
- ☐ clearly states my position
- ☐ is debatable (someone could argue the opposite)
- ☐ is one or two sentences
- ☐ can be supported by evidence in the text