

NOAA Teacher at Sea Program

Laura Guertin, Aboard NOAA Ship *Thomas Jefferson*
September 2 – September 19, 2014

Activity Title: “What *Should* We Be Worried About?” – when it comes to the coastal zone

Subject (Focus/Topic): The coastal zone and NOAA’s scientific role

Grade Level: This assignment was designed for college students in an introductory-level oceanography course for non-science majors, but the exercise can be easily used at the high school level and scaled down to middle school grades

Average Learning Time: This assignment was given in class, and students had a half-hour to complete the essay. This could be a homework assignment, where I would recommend taking 5-10 minutes to review the assignment with students and two weeks to complete outside of class.

Lesson Summary (Overview/Purpose): Based on the campus common read “What *Should* We Be Worried About?”, students will reflect upon all they have learned about the coastal zone at the end of the semester, identify one worry they have, and connect how NOAA and the hydrographic survey group can lessen that worry.

Overall Concept (Big Idea/Essential Question): This exercise is a final assignment at the end of a semester, where students are challenged to reflect upon all of their learning for the past fifteen weeks and make a personal connection to an issue in the coastal zone that worries them and allows them to see the role NOAA plays in the science and communication of coastal zone issues. The assignment also allows students and this course connect to a campus-wide common read initiative (and the book is available freely online for anyone to use at any school).

Specific Concepts (Key Concepts): Students will understand the scope of what they have learned throughout the semester. Students will be able to think about which topic they made a strong personal connection to and how NOAA also connects to that topic. Students will be able to engage in a writing exercise to communicate their personal concerns about the coastal zone yet see assistance/solutions provided by NOAA.

Focus Questions (Specific Questions): (listed above)

Objectives/Learning Goals: (1) To reflect upon the numerous coastal zone issues we learned about this semester; (2) To identify one coastal zone issue that concerns you; (3) To connect the work of NOAA (specifically the hydrographic survey fleet) in addressing this concern

Background Information: If completed as an in-class assignment, students need to be reminded ahead of time to bring their notes and books to class. Students may struggle to come up with a topic to write about, so they may need some additional time to formulate their thoughts.

Common Misconceptions/Preconceptions: I have not discovered any misconceptions or preconceptions, as students have never thought about what worries them the most in the coastal zone and NOAA's role before taking my course.

Materials: This assignment was handed out to students to complete in-class on the last day of the semester. Students were allowed to use their textbooks and class notes but were provided paper to write on. Teachers may want to provide students an example essay and/or show students the book essays provided on the book website: <http://edge.org/contributors/what-should-we-be-worried-about>.

Technical Requirements: No technical resources are needed during class time, if the assignment is done in class (students can use pen and paper). If the assignment is given as a take-home essay, students will need access to MS Word or Google Docs to type up and internet access to submit the assignment.

Teacher Preparation: Teachers should read through some of the essays in the book website to get a feel for the writing style and level of detail provided by the essay authors. Teachers may want to write their own essay (on a different science topic) and provide to students as an example, and/or refer students to the essays that are available online at the book website: <http://edge.org/contributors/what-should-we-be-worried-about>.

Keywords: NOAA, hydrography, coastal zone

Pre-assessment Strategy/Anticipatory Set (Optional): Some of the secondary goals of my courses include having students describe spatial and temporal properties and processes with the oceans, provide examples of the scientific interdisciplinary nature of oceanography, and articulate scientific arguments for why the oceans matter. I reminded students of these course goals when I assigned this in-class writing exercise (and would do the same for a homework exercise). I also share with the students that this final exercise gives them the freedom to explore and write about a topic that they connected with the most in the course.

Lesson Procedure: The handout at the end of this exercise was distributed to and reviewed with students. This assignment was given as an in-class assignment on the last day of classes, where students were allowed to use their textbooks and class notes to compose the essay. The assignment could also be given as a take-home assignment, limiting students to 500-800 words and requiring citations for any external resources.

Assessment and Evaluation: (provided in the assignment description at the end of this document)

Standards:

National Science Education Standard(s) Addressed:

Science as Inquiry (An appreciation of "how we know" what we know in science)
History and Nature of Science (Science as a human endeavor)

Ocean Literacy Principles Addressed:

#1 – The Earth has one big ocean with many features
#6 – The ocean and humans are inextricably interconnected

Pennsylvania State Science Standards Addressed:

CC.3.6: Writing: Students write for different purposes and audiences. Students write clear and focused text to convey a well-defined perspective and appropriate content

Additional Resources: All suggested resources are contained in assignment handout included with this document.

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What *Should We Be Worried About?* – when it comes to the coastal zone

A way to wrap up the semester and have the NOAA Ship *Thomas Jefferson* come to the rescue!

OBJECTIVES

- To reflect upon the numerous coastal zone issues we learned about this semester
- To identify one coastal zone issue that concerns you
- To connect the work of NOAA (specifically the hydrographic survey fleet) in addressing this concern

Our campus common read for this academic year is the book edited by John Brockman, titled *What Should We Be Worried About? Real Scenarios That Keep Scientists Up at Night*. We worry because we are built to anticipate the future. Nothing can stop us from worrying, but science can teach us how to worry better, and when to stop worrying.

You are being asked to write something that (for scientific reasons) worries you about our oceans – particularly something in the coastal zone that doesn't seem to be on the popular radar yet, and why it should be. Or share something you have now stopped worrying about in relation to our oceans, even if others still worry, and why it should drop off the radar. In your essay, you must connect NOAA and hydrographic surveying to your “worry” and what NOAA’s role is in helping lessen the impacts, provide information to the public, etc.

You have a ½ hour to write 5-7 paragraphs. You may refer to your class notes and textbooks to provide supporting details and data that justify your topic of concern.

Grading outline for your coastal zone worry

Everyone will start out with a score of “3” in each category. From there I will determine if the response is not up to college-level expectations or lacking information and a complete thought (can be lowered down to a 1 or 0), or if you greatly exceed expectations and did a really thorough job that “knocked my socks off” (up to a 5).

A clear description of the “what” of your worry	0	1	2	3	4	5
A clear description of “why” this is a worry for you	0	1	2	3	4	5
A clear description of how NOAA overall can help	0	1	2	3	4	5
A clear description of how NOAA hydrographic surveying can help	0	1	2	3	4	5

Total project grade is based out of 20 points

**NOTE – for students that complete this as a take-home assignment, provide the following URLs for reference:*

- Book website: <http://edge.org/contributors/what-should-we-be-worried-about>

- Dr. G's NOAA Teacher at Sea blog (esp. post from Sept. 4):
<http://teacheratsea.noaa.gov/2014/guertin.html>
- NOAA National Ocean Survey – hydrographic surveying:
<http://oceanservice.noaa.gov/navigation/hydro/>