A Marine Scientist At Work

Subject (Focus/Topic): This lesson will challenge the cultural and labor stereotypes of scientists and introduce Marine Sciences to interested students.

Grade Level: 6-12

Average Learning Time: approx. 1 90- minute block of time.

Lesson Summary (Overview/Purpose): Students will reveal their own personal stereotypes of what a scientist is and does for a living, learn what scientists really do on the job, and will focus specifically on the work that Oceanographers and Marine Scientists do. Finally, students will examine college choices and career paths that would match the work of a NOAA scientist.

Overall Concept (Big Idea/Essential Question): What does a marine scientist do on a day-to-day basis? What kind of education will I need to obtain this work lifestyle?

Specific Concepts (Key concepts):

Objectives/Learning Goals:

Students will be able to research a college or university that supports both the marine sciences and their own personal college preferences. Students will be able to find at least one college or university that matches these two requirements, and find a minimum of 7 pieces of information regarding the university and the program of study.

Background Information:

All background information will be gathered in the pre-assessment activity "A Scientist at work." Students will need online access to princetonreview.com and have a login and id set up through Princeton Review in order to make the college search more streamlined. As a teacher, it is helpful to go to the website ahead of time, set up a ghost account, and navigate the site to become familiar with locating links to webpages, narrowing results, etc.

Common Misconceptions: Many students may think that scientists are all old, white males with crazy hair who are holding exploding test tubes. One goal of this activity is to break this common misconception.

Materials:

*Computer access for all students

*White 8 ½ X 11" copy paper

*Colored pencils, markers, or crayons

*Projector access

*PowerPoint presentation (Who is a scientist?) provided

*Princeton Review College Search Handout

*Posterboard/Markers/Etc for lesson extension

Technical requirements: Teachers should have access to a projector in order to run given PowerPoint presentations. Students must have individual access to computers, either at home or at school in a computer lab.

Teacher Preparation: Teachers will need to make copies of provided handouts (included in this document), prepare to collect scientist data, and navigate the princetonreview.com website to get familiarized with links to pages, etc.

Keywords: N/A

Pre-Assessment: Before the lesson begins, pass out a piece of blank paper to each student and colored pencils or crayons. Ask students to draw a COLOR picture of a scientist at work. Do not provide any additional information. Allow students to spend about fifteen minutes on their pictures. Have them put their name on their picture.

Lesson Procedure:

1. Students complete pre-assessment.
2. Collect the following data from the pictures drawn as a group from the students:
    a. How many students drew Male Scientists? Females?
    b. How many scientists have crazy hair?
    c. How many scientists are old? Young?
    d. How many scientists are holding/working with glassware/explosives/chemicals in a lab? How many are working somewhere outside or in a non-traditional sense?
    e. *If your class is a comfortable and safe environment* What is the race of your scientist?
3. As a group, take a few moments to debrief your data. What patterns emerge? What is our common picture of a scientist?
4. Present the PowerPoint: Who is a scientist?
5. At the conclusion of the PowerPoint, have students discuss with a partner how their perceptions of scientific work have changed since the start of class.
6. Pass out the handout: ***College Search: Marine Sciences***
7. Give students about 45 minutes to complete the handout using a computer with internet access.
8. Lesson extension: Have students present their college of choice and Marine Career of choice on a poster board as a presentation to the class or as a "gallery walk" in the classroom.

Assessment and Evaluation: Assess according to the rubric provided.

Standards:

NSES STANDARDS: N/A

Additional Resources:

www.princetonreview.com

www.noaa.gov

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College Search: Marine Sciences

Objective: The goal of this lesson is to research a college or university that supports marine science as an undergraduate or graduate program and to critically examine both entrance and college requirements for becoming a marine scientist.

Demonstrating the Objective: Visit the website www.princetonreview.com and complete the following research.

1. Access a login to princetonreview.com by signing up for a free account (not required).
2. Find a college or university that fits your personal parameters for college life **and** offer marine sciences (Oceanography, Marine Biology, etc) as a program.
3. Learn the course requirements for completing a degree program in a Marine Science field that interests you.
4. Familiarize yourself with the University Website, admissions process, and campus life.

Directions:

1. Using a computer with internet access, visit www.princetonreview.com
2. Click on "college-bound"
3. Under the "Tools" section, click on "College Search"
4. Along the left side of the screen, you will find a list of filters to narrow your search.
5. Click first on "Majors"
6. Filter your majors for the following majors by checking ONLY the boxes indicated:
    a. Oceanography
    b. Wildlife Management
    c. Sustainable Resource Management
    d. Ocean Engineering
    e. Marine Biology
    f. Aquatic Biology

After narrowing your search, at the bottom of the screen, click "Apply Filters."

7. Next, select at least two other filters that fit YOUR needs (ie, region, public vs. private, total enrollment). You may need to "widen" your search if you do not get any returns.

My Personal Filters are…

Filter	**My Preference(s)**
Example: Public/Private	Public
1.	
2.	
3.	

8. Filter these selections according to your preferences.

9. Browse the colleges provided for the one that fits you best.
10. Next, select a college or university that fits both your filters and the "Majors" filter applied in the lesson.
11. Answer the following questions about the college you've selected below.

My Marine Science College:

1. College Name_____
2. College Location_____
3. Average GPA_____
4. Enrollment_____
5. Student/Faculty ratio:_____
6. Tuition Fees:_____
7. Three other interesting facts/statistics about my college:
    a. _____
    b. _____
    c. _____
8. Next, do a general internet search to get to the website of your college of choice.
9. Now, it's time to do some sleuthing. Browse the website to determine which Marine Science majors your college supports. Generally, clicking on the "Academics" and then the "degree programs" portions of the websites will direct you to that information.

Answer the following questions:

1. What program is specifically offered at this institution that fits with Marine Science?

2. Read the degree description/introduction given by the University to entice prospective students to the program. In 4 to 5 sentences, summarize the information they provide in the answer space below.

3. What levels of education are offered for this degree? (Is it an undergraduate BS degree, is a Masters (MS) offered, a PhD? All three?

4. Find the course requirements in order to earn this particular degree of choice. What are FIVE courses that are offered that you think would be fun/interesting/exciting to take? List the course code and the course title of each in the table below. An example has been done for you.

Course Code	**Course Title**
Ex: SMS 302	Oceanography
1.	
2.	
3.	
4.	
5.	

5. Now, take a look at some course requirements that look particularly challenging. Which THREE courses that are required for this degree program seem particularly challenging or appear to be "gatekeeper" courses that must be completed? An example has been done for you.

Course Code	**Course Title**
Ex: MAT 126	Calculus I
1.	
2.	
3.	

6. Summarize your findings by writing a paragraph that describes your college preferences, and what the institution has to offer. What are two positives and two negatives about this particular college you've researched? Would you consider pursuing a degree in marine science? Why or why not?