

Activity Title: Exploring Careers at Sea

Subject Focus/Topic: Career exploration, STEM

Grade Level: Advanced High School or College Non-majors: Biology, Environmental Science, Ecology, Earth Science

Average Learning Time: Two to four 50-minute class periods, plus student research outside class time

Lesson Summary (Overview/Purpose): Students will explore ocean-related career fields.

Overall Concept (Big Idea/Essential Question): This activity is designed to help students identify potential areas of career interest, understand the variety and nature of ocean-related career opportunities, and the educational and other qualifications necessary to secure employment in those fields.

Specific Concepts (Key Concepts)

- Interest profilers help students match their individual characteristics to career fields.
- There are many ocean-related career opportunities, both land-based and at sea.
- Positions require varying levels of education and training; from high school diploma through doctoral level work.
- There are advantages and disadvantages to working in the government or commercial sectors.

Focus Questions

1. What are my primary and secondary interest areas, as identified by an interest profiler?
2. What types of ocean-related career opportunities exist?
3. Which careers involve work on an ocean science research ship or on land?
4. What educational training and skills are necessary to prepare for those careers?
5. What are some advantages and disadvantages of working in the various sectors: government, educational/research institutions, commercial enterprises?
6. How can I find more information about those careers, qualifications, education and training required?
7. Which college majors provide the best preparation?

Objectives/Learning Goals:

- Students will describe on-campus and other resources to conduct an interest

- profiler to help define their individual interests.
- Students will identify resources on and off campus that provide information on ocean-related careers.
 - Students will identify ocean-related at sea and on land requiring different levels of education and training.
 - Students will investigate and report on a particular ocean-related job or career, including qualifications needed, the nature of the work, and career development opportunities.

Background Information:

Do you know what career best fits your skills, interests and goals? How do you know until you have researched and analyzed different possibilities?

Students should be familiar with the career planning resources available through the campus library, guidance or career services center, or online.

Students should also be familiar with various categories of jobs and career fields, such as public (government) and private/commercial sector, military, public service, education and research.

When commercial and research ships go out sea, hundreds or even thousands of people spanning dozens of careers are aboard, and scores more have land-based jobs to support the ship's operations. Ships are often at sea for weeks or months at a time. Therefore, they need to be self-contained and self-sufficient, carrying all the supplies necessary to support the people aboard and to carry out their scientific or other work. It takes everyone from chefs, engineers, medical staff and deck hands to keep the ship running safely and productively. Many students do not realize the number of diverse opportunities involved in ocean research and therefore may not realize that opportunities exist that match their own interests.

The [National Oceanic and Atmospheric Administration \(NOAA\)](#), a federal agency of the United States Department of Commerce, employs thousands of people to carry out its mission to protect and preserve the nation's living marine resources through scientific research, fisheries management, enforcement and habitat conservation.

Common Misconceptions/Preconceptions:

- The types of ocean-related careers are very limited.
- Ocean careers are only for scientists or those with very technical qualifications.
- You must have prior experience at sea in order to work at sea.
- Life at sea is harsh and difficult.

Materials

- Computers with Internet access
- Access to print or online resources with college and university catalogs and career related information

Technical Requirements

Computer projection equipment for class presentation or individual computers with audio and video capability.

Teacher Preparation

- Instructor should preview the NOAA career video, complete the interest profiler, and browse the recommended websites students will use for their research.
- Instructor may want to adapt the lesson contents, assignment requirements and the grading rubric as necessary.

Keywords:

- Career Interest profiler
- Career advancement
- Informational interview
- NOAA's Career categories: deck, engineering, steward, survey

Pre-assessment Strategy/Anticipatory Set:

- Ask how many students have been on a ship, to the ocean or a large inland lake or river.
- What jobs and careers come to mind when you think of the oceans? Navies, commercial ships, the fishing industry, cruise lines.... Tourism, scientific research, safety and rescue, law enforcement.
- Ask if anyone is familiar with NOAA and other ocean-related organizations.
- Brainstorm a list of ocean-related jobs and job categories.
- Discuss the kinds of benefits and challenges an ocean-related job or career might entail.

Lesson Procedure:

Seating Arrangement: Individual or groups of two to four students (according to instructor's preference)

Maximum Number of Students: 36

1. To prepare for this lesson, have students brainstorm in small groups or as a class:
 - Important considerations in choosing a job or career path (level of training and education required; working conditions and challenges; work schedule; flexibility; opportunities for advancement; salaries and benefits; safety and risks; level of satisfaction)
 - List ocean/marine-related jobs and careers related.
2. Lead a discussion of the results of the brainstorming session; fill in areas that may have been missed.

3. (Optional Career Interest Profile (See Appendix A)) 30-50 minutes. This activity can be completed during class time or at home. Have students take an online interest inventory or profiler. Many schools and colleges subscribe to a particular service; if so, use the one available to your students. The results of the inventory usually rank students' personality types: Realistic, Investigative, Artistic, Social, Enterprising, Conventional and provide a way to match the personality types with kinds of careers. (**Note:** This activity is helpful but not essential. If completed, it can be tied to the rest of the lesson, but if time is limited or an interest profiling program is not available, the rest of the lesson can proceed without having completed this.)

4. All students will view selected segments or all of NOAA's Wage Mariner video (17 min) and answer the following questions based on the information presented.

Wage Mariner <http://www.moc.noaa.gov/shipjobs/> (17 minutes total; or selected segments)

Optional: http://www.noaa.gov/images/onenoaa_cap_lan.mov (~3 min; overview of NOAA's work and career paths)

- a) What is NOAA's mission?
- b) What job categories are depicted?
- c) Describe the kinds of work NOAA's ships and mariners do.
- d) What are some of the benefits of employment with NOAA? According to the video, how do they compare with employment in the commercial (non-government) sector?
 - Advancement
 - Benefits
 - Work schedules
 - Time at sea and on shore
 - Four departments:
 - Deck
 - Engineering
 - Steward
 - Survey
- e) Where can one find out more about career opportunities with NOAA?

5. Each student will list at least three different careers that match his or her personality/interest type and will research one career in detail. If the interest profiler has not been completed, students may be assigned particular careers to research or may choose their own.

Directions to students: Using the resources provided in class or other authoritative sources (at least two different sources, properly cited), investigate and report on a specific job or career related to the oceans. You may focus on an individual person working in the field or provide more general information about a job category or career.

Formats: You may choose among the following formats for your report:

- a short paper or newsletter-style article
- a “letter from the field” , written from the point of view of a person in this job or career. Use your creativity!
- a brochure or poster (such as one used for recruiting or informational purposes)
- a brief (5-10 minute) presentation in class

Why so many options? Here’s why: Some students are much more comfortable presenting information orally than writing a paper. Some students have very good design skills and could make a brochure to convey information effectively. And some have mastered and prefer a traditional written report format. The range of options is offered so that instructors and students can adapt this activity to their specific circumstances and so that students can demonstrate the knowledge they have acquired in a format that showcases their strengths and interests.

Required contents: Your report, in whichever format you choose, should be complete, thorough and accurate. Be sure to define any technical terms. Provide **all** the following information:

1. What is the job, specialty or career field called? What is the main focus of the work?
2. Describe where and in what conditions do people in this field work. (On board ships at sea, on land, in offices or laboratories, outdoors, etc.)
3. What educational level, degrees or certifications, special training and experience are necessary for this type of work?
4. What are expected salary ranges for entry-level, mid-career, and top workers in this field?
5. What are the opportunities for advancement and mobility within the field?
6. What tools, instruments, equipment or special skills does a person in this specialty need or use?
7. Based on the information you have found, briefly describe the day-to-day work of a person in this specialty. (schedule, types of tasks, level of physical activity, environmental conditions, interactions with others) What are the demands, challenges and rewards of this work?
8. Would you enjoy this type of work? Why or why not?
9. Cite your references in proper MLA or APA format. Briefly describe what criteria you used to determine the legitimacy of the sources you chose.

Resources:

America’s Career InfoNet Career Video Collection

www.acinet.org/acinet/videos_by_cluster.asp?show=y - Career videos of broad industry areas (Career Clusters) as well as videos of specific careers within each broad industry area.

Select the cluster title to view a list of career videos in that cluster.

Agriculture, Food and Natural Resources

Science, Technology, Engineering and Mathematics

Assessment and Evaluation: See rubric provided in Appendix B.

Additional Resources

- Careers in Marine Sciences <http://www.marinecareers.net/>
- NOAA Career Fields
 - NOAA OceanAge Career Profiles oceanexplorer.noaa.gov/edu/oceanage/welcome.html.
An excellent collection of multimedia sources and interviews with professionals working in ocean-related fields. A great place to explore career possibilities and find out day-to-day nature of the work directly from those who are doing it.
- NOAA Opportunities for Students – scholarships, internships and fellowships for undergraduate and graduate students
- Deep Earth Academy/Consortium for Ocean Leadership
www.oceanleadership.org/careers_flash.html
- Colleges and Universities with marine science-related programs
http://www.marinecareers.net/links_degrees.php
- Internship and Volunteer Programs in marine and environmental sciences

General Career Resources

Career One Stop <http://www.careeronestop.org/> United States Department of Labor.
Excellent comprehensive resources, including videos describing many career fields.

State of New Jersey Department of Education Career Exploration Tools and Materials to Assist Educators, Counselors, and Students:

<http://www.nj.gov/education/cte/resources/tools/exploration.htm> - Lists many resources for career exploration, training opportunities and job outlooks in different fields.

Career Exploration Quest <http://www.kn.sbc.com/wired/fil/pages/webcareeremr.html>

This career exploration quest will enable you to determine your personality type and allow you to measure your interests. This learning activity is designed as an interdisciplinary activity with collaboration among several different groups, including but not limited to, guidance counselors/advisors and classroom teachers.

Conclusion: With the information you have gathered and presented to the class, you should have a better understanding of your personality type and interests, as well as career(s) that fit into these areas and the education, training and technology skills needed to obtain work in those career fields. Now you know much more about how to explore a career and requirements to prepare for it.

Standards:

- **National Science Education Standards Addressed**

- **Ocean Literacy Principles Addressed**

http://oceanliteracy.wp2.coexploration.org/?page_id=47

[Ocean Literacy Principle #6:](#) The ocean and humans are inextricably interconnected.

- **State Science Standards Addressed**

- **Other National or State Standards Addressed:**

ASCA (American School Counselor Association) Standards

(<http://wvde.state.wv.us/counselors/links/initiatives/ASCA%20National%20Standards.pdf>):

7.2. Career development. Provide the foundation for the acquisition of skills, attitudes and knowledge enabling students to make a successful transition from school to the world of work and from job to job across the life career span. The career development content standards are:

7.2.1. Standard 4: Students will acquire the skills to investigate the world of work in relation to knowledge of self and to make informed career decisions.

National Educational Technology Standards for Students (NETS-S) The Next Generation (http://cnets.iste.org/students/NETS_S_standards-1-6.pdf):

2. Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

3. Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information.

National Business Education Association (NBEA) standards

(<http://nbea.org/curfbes.html>):

Career Development:

I. Self-Awareness - Achievement Standard: Assess personal skills, abilities, and aptitudes and personal strengths and weaknesses as they relate to career exploration and development.

II. Career Research - Achievement Standard: Utilize career resources to develop a career information database that includes international career opportunities.

Communication:

I. Foundations of Communication - Achievement Standard: Communicate in a clear, courteous, concise, and correct manner on personal and professional levels.

II. Social Communication - Achievement Standard: Apply basic social communication skills in personal and professional situations.

III. Technological Communication - Achievement Standard: Use technology to enhance the effectiveness of communication.

Information Technology:

VII. Information Retrieval - Achievement Standard: Gather, evaluate, use, and cite information from information technology sources.

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Creation Date: March, 2012

Appendices:

- A) Instructions for Career Interest Profile Activity
- B) Cover sheet and grading rubric for Ocean Careers Assignment
- C) Optional extension activity
- D) Additional Career Resources

Appendix A

Instructions for Career Interest Profile Activity

(This activity uses [CHOICES](#), but instructors may choose a different career interest inventory.)

Use the resources provided to complete an online questionnaire designed to help you identify the types of career areas that might match your interests. The career area need not be related to the environment.

[CHOICES](#) is an online application designed to help you identify your interests and jobs that might fit your profile. You can easily open a personal account which will save your information if you wish to review it or continue working with it.

Go to www.bridges.com

Create your portfolio under *Student Sign In*; set up a name and password to save your results.

Click *Choices Planner, Student Version*

Interest Profiler under Work

Answer all the questions quickly. Just read each one and think about whether you would like to do what it describes. Remember that:

- There are no right or wrong answers.
- The questions are not asking if you have the skills needed, but only if you would you LIKE doing the job or task described.

When you are finished, you will see Top Interest Areas with descriptions of the various profiles. Select two of these and then print this information. To print, go to the top right of the page, click print and type your name in the box.

After you have completed this, you will see two selections at the bottom of the page:

- Check out careers matching your interests
- See how your interests match up with Career Clusters

You can browse and click/view as many of the jobs/clusters that seem interesting or a good fit to you. You can always access career information, so you need not print a lot of these jobs.

Write your response to Question 1 in the response section, based on the profile you produced.

1. List the categories from your interest profile in order, and briefly describe the top ones.

- a) How well does the profile reflect your interests?
- b) What characteristics does it miss, if any?
- c) Anything surprising?

Other FREE career/job resources

O'Net online to see what skills you already possess to land the occupation/career that you want.

Take this short quiz and see what occupations come up. Then, look and see what skills are necessary to do what you really want to do. <http://www.onetonline.org/skills/>

Appendix B

COVER PAGE FOR SUBMISSION – OCEAN CAREERS ASSIGNMENT

Name: _____ Section Day/Time: _____

Report title: _____

Evaluation Criteria/Rubric: Use these criteria to evaluate your own work, complete the form and submit it along with your assignment.

Max Pts. Self-evaluation score

Did you include all required components?	4	
Is the information presented clearly and accurately? Is the writing your own, with proper grammar, spelling and word use?	3	
Did you define & use technical terminology appropriately?	1	
Did you use appropriate sources, cite them properly, and explain your selection criteria?	2	
Total points (Maximum = 10)		

Your self-assessment and comments on the assignment:

Appendix C: Extension/Extra (Optional)

Conducting Informational Interviews: Speaking to People in Your Field of Interest

If it is possible, provide opportunities for students to conduct informational interviews of people that have experience in a marine-related field. The purpose of an informational interview is to learn about a field of work from someone who has firsthand knowledge of it. The informational interview is helpful both for those who are undecided about a career path and for those who have already identified a specific field of interest. The links below can help students prepare for an informational interview with someone in their field(s) of interest. Conducting an informational interview will help students develop communications skills as well as find out more about the rewards and challenges of particular career fields.

- [Informational Interviews: Career Planning](#) – Purpose and description of informational interviews
- [Informational Interviewing Tutorial from Quintessential Careers](#) – Helpful tips and suggested questions
- [Informational Interview Questions - CareerChoiceGuide.com](#) - More suggestions for questions to ask during informational interviews

Appendix D

Career Resources

[The Bridge](http://www2.vims.edu/bridge/search/bridge1output_menu.cfm?q=career) – Marine Education Resources for Teachers

http://www2.vims.edu/bridge/search/bridge1output_menu.cfm?q=career

[Marine Science Careers](#)

Full-color four-page publication that describes the many careers in marine science and how to become a marine scientist. Free download.

Grade Level: Middle school, High school

[Oceanography Careers-Women in Marine Sciences](#)

Introduces the careers of several women in oceanography. Each woman has followed a different path and offers unique insights about her profession. Learn how each goes about her daily work and contributes to understanding the ocean. Careers range from research scientists and professors to technical and support crew. Disciplines covered: marine chemistry, sealife, microbiology, geology and geophysics, research ship operations, scientific illustration. Profiles feature video, work week description, resume and more. An Exploratorium Cool Site Award Winner.

Grade Level: Middle school, High school

[Sea Grant Marine Careers](#)

Excellent site introduces careers in marine biology, oceanography (biological, chemical, physical, geological), ocean engineering, related fields like marine educator, fisherman. Profiles of professionals in each discipline demonstrate the diversity of people working in marine science. Valuable advice from experts on how to prepare. Career Outlook and Salaries describe what to expect for positions in academia, industry, government and other arenas. Helpful FAQ section; Resources and Links list job search information, internships and more.

Grade Level: High school

[Strategies for Pursuing a Career in Marine Mammal Science](#)

This site addresses questions commonly asked by people seeking a career in marine mammal science in the United States and provides suggestions on how to plan education and work experience. The format is a series of questions and answers with abundant links to others sites. Purpose of this page is not only to help a student decide if a career is appropriate, but also to provide access to job offerings.

Grade Level: Middle school, High school, Undergraduate lower division

[Careers & Jobs in Marine Biology & Oceanography](#)

Portal with around 80 links to universities, zoos, aquariums, organizations, private parks, and research institutions. The purpose is to provide advice for those interested in a career in the marine or aquatic sciences, and also to compile postings for jobs, post docs, traineeships, and internships specific to the marine and aquatic sciences.

Grade Level: High school, Undergraduate lower division

[A Career Guide to Marine Mammal Training](#)

This free, interactive and independent website has been conceived and designed by working marine mammal professionals to provide accurate, hard to find information and rare behind the scenes views and insights into the fascinating world of marine mammal care and training. The site includes career information, photos and videos, a fact vs fiction section, and extensive information on the bottlenose dolphin.

Grade Level: High school, General public

[OceanCareers.com](#)

This site provides information on: ocean science career opportunities, the knowledge and skills required to enter these careers, where students can gain the necessary education, ocean science employers, and much more. It also includes all the necessary information to lead educators and students to resources on furthering education and joining the marine science work force.

Grade Level: Middle school, High school, Undergraduate lower division, Undergraduate upper division, Graduate or professional, General public

[NOAA Commissioned Officer Corps](#)

NOAA Commissioned Corps Officers are an integral part of NOAA. Officers can be found operating one of NOAA's 18 ships or 14 aircraft to provide support to meet NOAA's missions. Duties and areas of operations can range from launching a weather balloon at the South Pole, conducting hydrographic or fishery surveys in Alaska, maintaining buoys in the tropical Pacific, flying snow surveys and into hurricanes.

Grade Level: High school, Graduate or professional