Sally Ride Science/NSTA Web Seminar:

From Astrobiology to Zoology: Igniting Students’ Interests in Science Careers

Brenda Wilson, Sally Ride Science
Julie Miller, Olathe District Schools, KS

Tuesday, May 20, 2008
What is Sally Ride Science?
http://sallyridescience.com
Encouraging Interest in Science has Never Been More Important

1. In the 4th grade, two thirds of boys and girls like science. Then...

2. Too many students do not know what scientists do or who they are.

3. Many students do not see the relevance of science, or connect it to the real world.
Encouraging Interest in Science has Never Been More Important

4. Science plays a greater role in our lives than ever before.

5. Students who have a solid background in science are prepared for a wide variety of opportunities.

6. Science improves and grows only through the contributions of diverse perspectives.
Exciting Students About Careers in . .

- Environmental Sciences
- Space Sciences
- Health Sciences
- Earth Sciences
Teaching Students about Careers in Science

The Framework

1. Understand the Wide Variety of Science Careers
2. Igniting Interest in Science
3. Map Out Your Future
4. Know Yourself
5. Acquaint Yourself with Scientists
Possible Careers in Environmental Sciences

- Climate Scientist
- Marine Biologist
- Forest Ecologist
- Building Physicist
- Geologist
- Environmental Mapper
- Materials Scientist
- Environmental Reporter
- Wildlife Officer
- Microbiologist
- Environmental Policy Expert

What Are Other Careers in Environmental Sciences?
What Are Other Careers in Environmental Sciences?
A marine biologist studies the plants, animals, and microbes that live in water ecosystems. Sylvia dives and documents life undersea, and shares her research through books, lectures, and films. Other marine biologists

✶ track whales from Alaska to Hawaii.
✶ examine bacteria under microscopes.
✶ work at aquariums.
✶ protect coral reefs from destruction.

About You

As a girl, Sylvia loved playing with horseshoe crabs on the beach, even though adults told her they were dangerous. “That gave me self-confidence about trusting my own observations. And that’s one of the first marks of being a scientist.” What makes you a good scientist?
**What Are These Statements**

**TRUE or FALSE?**

What marine biologists know…

<table>
<thead>
<tr>
<th>Statement</th>
<th></th>
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<tbody>
<tr>
<td>Paper, toothpaste, and ice cream contain seaweed.</td>
<td></td>
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<tr>
<td>The ocean contains 90 percent of all living species.</td>
<td></td>
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<tr>
<td>Ocean plants produce most of the oxygen in the air.</td>
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<tr>
<td>Some fish can change their sex.</td>
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</tbody>
</table>
Careers in Environmental Sciences

About Me

*I would like to study the environment using . . .*

<table>
<thead>
<tr>
<th>Microscopes</th>
<th>Computers</th>
<th>Binoculars</th>
<th>Satellites</th>
<th>Submersibles</th>
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</thead>
<tbody>
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</tbody>
</table>
Careers in Environmental Sciences

About Me

*I would like to visit. . . *

<table>
<thead>
<tr>
<th>The jungle</th>
<th>The ocean floor</th>
<th>The North Pole</th>
<th>The eye of a typhoon</th>
<th>India</th>
</tr>
</thead>
</table>


# Careers in Environmental Sciences

## About Me

*I would like a job where I can...* 

<table>
<thead>
<tr>
<th>Protect animals</th>
<th>Report for a newspaper</th>
<th>Explore the world</th>
<th>Design efficient cars and buildings</th>
<th>Teach people to protect Earth</th>
</tr>
</thead>
</table>
Let’s Pause for Two Questions from the Audience
A Few Careers in Space Sciences

• Astrobiologist
• Astronaut
• Astronomer
• Astrophysicist
• Communications Engineer
• Geologist
• Planetarium Director
• Plant Physiologist
• Space Reporter
• Systems Engineer
• Volcanologist

What Are Other Careers in Space Sciences?
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>1.</td>
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<tr>
<td>2.</td>
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<tr>
<td>3.</td>
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<tr>
<td>4.</td>
<td></td>
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<tr>
<td>5.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
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</tr>
</tbody>
</table>

What Are Other Careers in Space Sciences?
An astrophysicist investigates the Universe and tries to understand how it works. Geoff searches for planets orbiting other stars. Other astrophysicists
• study how stars are born.
• use computers to simulate the origins of the Universe.
• observe faraway galaxies.
• hunt for comets and large asteroids.

About You
As a kid, Geoff searched the night sky for constellations. Which constellations have you seen?
What Part of Being an Astrophysicist Would You Like Most?

A. Using powerful telescopes to look at stars and planets

B. Learning about how the Universe works

C. Discovering new galaxies

D. Searching for life on other planets in our solar system
A Few Careers in Health Sciences

• Biochemist
• Epidemiologist
• Medical Illustrator
• Medical Reporter
• Neurobiologist
• Nutritionist
• Obstetrician
• Orthotist
• Pediatric Neurosurgeon
• Physical Therapist
• Professor of Public Heath

What Are Other Careers in Health Sciences?
What Are Other Careers in Health Sciences?

1. 

2. 

3. 

4. 

5. 

6.
**Orthotist**

An *orthotist* builds braces and other supportive equipment for the body. Ralph helps injured soldiers to move more easily. Orthotists also:

- design braces for people with neck or wrist injuries, including carpal tunnel syndrome.
- build footwear for people with foot injuries or deformities.
- outfit children with cerebral palsy or scoliosis with spinal braces.

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**Ralph Urcoeltes**
Walter Reed Army Medical Hospital

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**About You**

Growing up, Ralph liked to fix and build things. He took after his dad who was an airplane mechanic. He also took after his mother, who helped others as a nurse. What are some of the things you like to do? Whom do you like to help?

________________________

________________________

________________________
What Part of Being an Orthotist Would You Like Most?

A. Using high-tech equipment
B. Helping injured people to recover their ability to move again
C. Designing artificial body parts
D. Educating the public about prosthetic and orthotic devices
# Careers in Health Sciences

## About Me

*I think it would be cool to work...*

<table>
<thead>
<tr>
<th>In a hospital</th>
<th>At a disaster relief center</th>
<th>Inside a research lab</th>
<th>At an athletic training center</th>
<th>In an operating room</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
### Careers in Health Sciences

#### About Me

*I would like a job where I can...*

<table>
<thead>
<tr>
<th>Perform surgeries</th>
<th>Draw pictures of the body</th>
<th>Write about medical discoveries</th>
<th>Help people to become healthier</th>
<th>Make sure that food and medicines are safe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
Let’s Pause for Two Questions from the Audience
A Few Careers in Earth Sciences

• Atmospheric Chemist
• Civil Engineer
• Computational Physicist
• Earthquake Seismologist
• Geochemist
• Geographer
• Geophysicist
• Meteorologist
• Paleoclimatologist
• Science writer
• Volcanologist

What Are Other Careers in Earth Sciences?
What Are Other Careers in Earth Sciences?

1.

2.

3.

4.

5.

6.
A geographer studies the locations of Earth’s features and how people affect and are affected by them. Dawn maps the ocean floor. Other geographers

✦ protect wildlife by managing coastal zones.
✦ plan the use of water.
✦ lead outdoor expeditions.
✦ help developers predict environmental impact.
✦ guide toxic waste disposal.

About You
Dawn writes computer software that draws maps. What do you use computers for?
Are These Statements TRUE or FALSE?

What *geographers* know…

<table>
<thead>
<tr>
<th>Statement</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the last 200 years, CO₂ in Earth’s atmosphere has increased 30 percent.</td>
<td><strong>TRUE</strong></td>
</tr>
<tr>
<td>The largest hazardous waste landfill is in Alabama.</td>
<td><strong>FALSE</strong></td>
</tr>
<tr>
<td>The city of Mendoza is in Chile.</td>
<td><strong>TRUE</strong></td>
</tr>
<tr>
<td>The 1906 earthquake in San Francisco was the largest in our nation’s history.</td>
<td><strong>TRUE</strong></td>
</tr>
</tbody>
</table>
# Careers in Earth Sciences

## About Me

*I would like to visit...*

| An active volcano | The seafloor | The eye of a hurricane | The Himalayan Mountains | Space |
## Careers in Earth Sciences

### About Me

I would like a job where I can... 

<table>
<thead>
<tr>
<th>Dive in a submarine</th>
<th>Break open rocks</th>
<th>Take samples of the atmosphere</th>
<th>Work in faraway places</th>
<th>Work in a lab</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>
As you do activities—in any subject—discuss a career in which students would use that skill.

<table>
<thead>
<tr>
<th>Career</th>
<th>Skill/Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental chemist</td>
<td></td>
</tr>
<tr>
<td>Space reporter</td>
<td></td>
</tr>
<tr>
<td>Epidemiologist</td>
<td></td>
</tr>
<tr>
<td>Civil engineer</td>
<td></td>
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</tbody>
</table>
Link Activities to Science Careers

As you do activities—in any subject—discuss a career in which students would use that skill.

<table>
<thead>
<tr>
<th>Environmental chemist</th>
<th>Skill/Activity:</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>
Interview Scientists

1. Contact department of public relations at local universities or colleges.

2. Contact museums, observatories, aquaria

3. Contact national science organizations (Google "science organizations" to get a comprehensive list by discipline.)

Other strategies?
Students Create a List of Interview Questions

1. What did you want to be as a child?

2. What is the best part about your career?

3. What skills do you use?

Think of more questions....
Thanks to our presenters, Brenda Wilson and Julie Miller and to Sally Ride Science for sponsoring this program
Welcome to Your Professional Development

The Learning Center is NSTA’s e-professional development portal to help you address your classroom needs and busy schedule. You can gain access to more than 2,600 different resources that cater to your preference for learning. Over 700 hundred resources, such as journal articles, science objects, and web seminars are available for free. A suite of practical tools such as My Library, My Transcript, and My Professional Development Plan and Portfolio tool help you organize, personalize, and document your growth over time.

Explore Learning Opportunities

<table>
<thead>
<tr>
<th>By Subject</th>
<th>By Grade Level</th>
<th>By State Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth &amp; Space Science</td>
<td>Elementary</td>
<td>Find resources based on their correlation to your state standards.</td>
</tr>
<tr>
<td>Life Science</td>
<td>Middle School</td>
<td>Coming Soon!</td>
</tr>
<tr>
<td>Physical Science</td>
<td>High School</td>
<td></td>
</tr>
<tr>
<td></td>
<td>College</td>
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</tbody>
</table>

Do-It-Yourself Learning

Learn at your own pace online with these 1-2 or 6-10 hour interactive activities.

Live Online Seminars & Classes

Learn online from certified instructors with your colleagues. 1-2 hour seminars, week and month long courses are available. Earn state...

http://learningcenter.nsta.org
National Science Teachers Association
Gerry Wheeler, Executive Director
Frank Owens, Associate Executive Director
Conferences and Programs
Al Byers, Assistant Executive Director e-Learning

NSTA Web Seminars
Flavio Mendez, Director
Jeff Layman, Technical Coordinator

NSTA Web Seminars
LIVE INTERACTIVE LEARNING @ YOUR DESKTOP