Immersion Learning, Exploring the Ocean

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The E/V Nautilus is an Exploration Vessel developed by Dr. Robert Ballard, who is known by many for locating the remains of the RMS Titanic. The E/V Nautilus explores the depths of the ocean that have undergone very little (if any) previous study. One way the E/V Nautilus explores the ocean is with Remotely Operated Underwater Vehicles (ROVs). The E/V Nautilus has two ROVs, called Hercules and Argus. Hercules is equipped with lights, cameras, maneuverable arms, and sample tubes to bring high definition video and scientific samples back to the surface. Argus is positioned above Hercules, and serves to keep Hercules steady when the seas are a bit rough. Argus can also take pictures and video of Hercules.

We had the opportunity to participate in the Immersion Learning Program, a division of JASON Learning, through Central Connecticut State University’s (CCSU) TRIO Educational Talent Search program. The Immersion Learning Program connects students with scientists and explorers on the E/V Nautilus, who are currently on an expedition in the Pacific, which began in the Gulf of Mexico. We were able to ask these scientists questions and watch live video at www.nautiluslive.org. We submitted questions to the website through the Internet, which are then relayed to the ship via satellites orbiting the Earth. One question was about the white specks that we see floating in Hercules’ video all the time. The scientists told us that it was marine snow. We were also able to see video of Hercules discovering hydrothermal vents and brine seeps. Our TRIO instructors, Nick Lombardo and Anthony Vinci, helped us make models of these geologic features to better illustrate how they work.

We will return to the program to construct our own ROVs, that we will then test dive in our local Boys and Girls Club pool. Our ROVs will be made of PVC pipes, simple electronics, and other assorted materials from the hardware store. This will allow us to see what it’s like for the E/V Nautilus crew when they send down and operate their ROVs.

Dr. Ballard is a member of the Connecticut Academy of Science and Engineering. He is also founder of JASON Learning (www.jason.org) a nonprofit organization created to inspire and educate kids everywhere through real science and exploration.

SKILLS + KNOWLEDGE

This program taught us many skills that we can apply when we are in school. One skill is gaining the confidence to contact real scientists and ask questions. We learned that any question, if serious, is a good question to ask. We also now have a much better understanding of how the ocean works. We can’t wait to share this knowledge with our families when we go to the beach next!

MEET THE SCIENTIST

Eunice Alicea -- I first learned about marine life was when I was 7. My father took me to Mystic Aquarium where I saw the most beautiful creatures of the sea, such as the rays. Now I am 12 and I enjoy learning about animal life because I am planning to become a veterinarian. I was inspired to become a veterinarian by Dr. Jan Pol, from the TV show Dr. Pol. The Immersion program showed me more fascinating aspects of the ocean, such as the incredible biodiversity and continuing mysteries of the ocean.

Isaac Burgos -- I wasn’t really into science that much until this program. It has been my dream to be a major league baseball player since I first started playing baseball when I was 4 years old. I have also realized that grades come first and that if I want a career, I have to have a good education. This program has actually helped me understand some of the science that goes on in the ocean, such as how the ocean impacts human life. What I learned was very fascinating to me and I now find the ocean a much more interesting place.

Words to Know

ROV: Remotely Operated Vehicle that is controlled by a tether (called an umbilical cord) which can be sent to places that people normally cannot go.

Marine Snow: Marine snow are the white specks of matter that float around in the ocean. These specks are made of decomposed organic materials.

Hydrothermal Vent: A place in the ocean where very hot water is spewed from beneath the ocean floor. They are good places to find living things because they are warm and have a lot of nutrients.

Brine Seep: A place where water that is saltier than seawater, called brine, seeps from the ocean floor. It is denser than seawater, so it stays at the bottom of the ocean.

Sites to Visit

https://www.facebook.com/trioetsccsunewbritain
http://www.nautiluslive.org/
http://www.jason.org/

Common Core State Standards (CCSS): Mathematics
- CCSS.Math.Practice.MP1 Make sense of problems and persevere in solving them
- CCSS.Math.Practice.MP3 Construct viable arguments and critique the reasoning of others
- CCSS.Math.Practice.MP4 Model with mathematics
- CCSS.Math.Practice.MP5 Use appropriate tools strategically

Connecticut State Department of Education (CSDE): Science Framework
- Scientific inquiry is a thoughtful and coordinated attempt to search out, describe, explain and predict natural phenomena
- Scientific inquiry progresses through a continuous process of questioning, data collection, analysis and interpretation
- Scientific inquiry requires the sharing of findings and ideas for critical review by colleagues and other scientists