

Partnership

Fall 2007 Issue: Volume 17, No. 1

Co-Chairmen's Report: The Power of Partnerships

- Pat Harcourt and Patti Parker

There are many phrases extolling the benefits of partnerships: "it takes a village to raise a child," "united we stand," and even the political slogan "together we can." For those of us in the education and science communities, almost everything we do requires cooperation and working with colleagues. As we plan for programs in the new school year, WHSTEP will draw on its strong partnerships with schools, science institutions, and businesses to design and deliver useful, engaging, and informative programs.

WHSTEP is in the business of promoting and supporting interactions among educators and scientists both to improve science literacy among students and to increase opportunities for scientists to work with teachers and students. The comments, suggestions, and feedback we receive from participants in our programs help keep us informed of the high-interest topics and most practical formats for our programs. Based on responses to last year's programs, this year we are planning a workshop on how to write a Mini-Grant proposal, an entertaining presentation with lots of "gee-whiz" science demonstrations, and a field trip to a local engineering and technology project. We are also participating in an exciting technology initiative in Falmouth Public Schools.

As a member of the WHSTEP community, your role in keeping the partnership strong is to participate in events, communicate with your liaison, and share your ideas for how we can best fulfill our mission. This year, the local education and science communities face tight budgets and demanding schedules. We will rely on the power of partnerships to share the

coordination and presentation of events, workshops, and member meetings. We need all hands to help us make this a great year for teachers, students, and scientists. We look forward to hearing from you and to seeing you at our events!



Liese Siemann

Max Holmes describes satellite photos showing decreasing sea ice in the Arctic during his presentation at the January "Polar Bears in Peril" safari.



Can you win WHSTEPardy? (Answers on Page 6)

This person helps to distribute information from WHSTEP to their colleagues where they work.

These are the school districts involved in the WHSTEP program.

These programs are held after school 2-3 times a year for teachers to gain more experience and resources for their classes.

The WOODS HOLE SCIENCE AND TECHNOLOGY EDUCATION PARTNERSHIP (WHSTEP), established in 1989, is a partnership of schools, scientific institutions, businesses, and community resources. Its purpose is to support, promote, and expand science, math, and technology education and science literacy in the participating communities.

WHSTEP Science Safari – Polar Bears in Peril

- Pat Harcourt

Thursday January 11, an unseasonably warm winter afternoon, provided the context for "Polar Bears in Peril," a WHSTEP safari on the topic of climate change, held at the Mullen-Hall School in Falmouth. This topic was chosen because it is one of the most critical issues in both scientific research and science education today. Teachers in Bourne, Falmouth, and Mashpee have expressed strong interest in learning more about climate change and collecting ideas for teaching about this important topic.

The WHSTEP Program Committee was fortunate to engage Dr. Max Holmes of the Woods Hole Research Center as a presenter. Dr. Holmes' research includes studies of Arctic freshwater volume and river flow, and the impact of climate change on the cycles of water and chemicals in the environment. As a presenter, Dr. Holmes proved to be a great communicator, introducing the complex topic with clear descriptions and examples drawn from familiar experiences. His slide show included beautiful images of frozen Arctic landscapes, icy rivers, and people bundled in warm winter parkas, but it also included sobering images showing a steady increase in global average temperatures, dramatic losses in Arctic Ocean ice, and increasingly rapid melting of glaciers. Dr. Holmes showed that the Arctic is already beginning to experience the consequences of warming, which are predicted to be more significant near the Poles than at lower latitudes. These changes affect not only people who live in the Arctic, but also land animals like caribou and marine animals like polar bears.

Dr. Holmes charmed the group with a description of a recent study of the Lena River in the Siberian Arctic. On board the research vessel, the team enlisted the able assistance of Anya Suslova, the 13-year-old daughter of the ship's captain, Mikhael Suslov. Dr. Holmes described how Anya amazed everyone with her sharp mind, active participation in sample collection and processing, and rapid grasp of the overall goals of the project. Before leaving the Lena River on the way to the Kolyma River, the team explained to Anya that they were interested in obtaining winter samples, but that the researchers

- Continued on page 3 – "Polar"

WHSTEP Science Safari – Treasure Hunt!

- Pat Harcourt

The iconic shape of Cape Cod's bent arm shows up on all kinds of images, from satellite photos to business signs. This familiar shape was the focus of a discussion of points of reference for the WHSTEP safari on teaching with maps and compasses, held Thursday, April 26 at Bourne Middle School. The group of teachers from Bourne, Mashpee, and Falmouth gathered in the art room, which had wide tables perfect for spreading out maps and charts.

To start, the teachers studied a series of maps centered on Cape Cod, but showing it as part of New England, or the Gulf of Maine, or as part of southeastern Massachusetts. Each map had different types of information coded as numbers, lines, or colors. A bathymetric, or depth, map of the region showed the Cape projecting onto the shallow continental shelf, which drops off dramatically south and east of Georges Bank. A watershed map of New England showed the huge land area where water drains into Massachusetts Bay and the Gulf of Maine. A nautical chart was studded with small outlines highlighted with a warning that fishing there might damage nets because they marked the sites of shipwrecks! Each map was introduced with a few guiding questions to get the teachers started in their explorations, and each exploration generated more and more questions, demonstrating how useful maps are for engaging students and motivating them to learn. All agreed that maps add a crucial dimension to studies of science and history, and several of the teachers described how they use maps to reinforce math and writing skills.

The description of the safari had included a promise of a treasure hunt, so after discussing and applying some basic map concepts, the group went outdoors to follow a route to a secret treasure. The teachers had to find landmarks, take compass bearings and follow a course, measure and count steps to find distances, and verify their location by lining up points of reference. After a trek around the schoolyard, including a bit of hill climbing, they were rewarded with the discovery of a cache of compasses.

Back in the classroom, the group discussed ideas for teaching with maps and charts. At the end of the

- Continued on page 3 - "Maps"

didn't plan to collect additional samples until March 2004. After telling Anya that any samples she might be able to collect over the ensuing months would be a huge contribution to the research project, and supplying her with collection supplies, she was able to collect samples every two weeks throughout the winter!

The teachers who attended the safari came away with a better understanding of climate change, the Arctic, and some lesson plans to share with their classes. To read more about Max Holmes's research in the Arctic for the PARTNERS project, go to <http://ecosystems.mbl.edu/partners/education.html>



Liese Siemann

Wendy Scholes, a teacher at East Falmouth Elementary School, finds out how effective blubber can be when she places her hand, covered in a “blubber” glove, into a bucket of ice water. Lawrence School teachers Bob Heller and Judy Harbison await their turn. This was one of several classroom activities described to teachers at the “Polar Bears in Peril” safari.

safari, each teacher left with an armload of information, lesson plans, local maps and charts, which will show up in classrooms from 41° 45' N 70° 35'W to 41° 35' N 70° 30' W !

WHSTEP extends many thanks to Nancy Soderberg and USGS for the wonderful maps, charts, and teaching resources, and to Nancy Church of WBNERR and Erin Baker of AmeriCorps Cape Cod for helping organize and present this safari.



Patti Parker

Sheila Carotenuto, a teacher at the Quashnet School in Mashpee, hunts for treasure with the aid of a compass and fellow teachers Pat Willbanks from Bourne Middle School and Barbara Sabulis from the Hoxie Elementary School in Bourne.

WHSTEP Welcomes New Liaisons & Board Members

- Arlene Hanlon

One of the most important components of the WHSTEP partnership is the liaison network, which is comprised of at least one representative from each member school and organization. The responsibility of the liaison is to make the connections that are so vital to the functioning of the partnership. With the 2007-2008 school year, WHSTEP welcomes five new liaisons: Michele Bahr, MBL; Ginny Edgcomb, Falmouth Academy; Laura Gray-Shultz, Peebles Elementary School; Sarah Lavoie, Bourne Middle School; and Gordon Starr, Teaticket Elementary School.

The WHSTEP Executive Committee welcomes new member Sarah Bordenstein from MBL. We would also like to express appreciation to retiring Executive Committee member Dana Seitsma.

WHSTEP General Meeting—Renewable Energy Curriculum at UCT

- Arlene Hanlon

Renewable energy was the topic at WHSTEP's yearly General Meeting hosted by Upper Cape Cod Regional Technical School in Bourne in January. The program included a tour of the technical school, but the highlights of the meeting were the student presentations illustrating the wide range of UCT's environmental and renewable energy curriculum.

Ryan Delgado, an Upper Cape sophomore, gave a PowerPoint presentation discussing his student project, the use of the Solar Pathfinder. Ryan explained his method for setting up the Solar Pathfinder on UCT's campus and the positioning of the photovoltaic panels, small solar cells that take in solar energy and convert it into direct current electricity. The two panels are 8.5 feet wide and 12.5 feet long, producing a combined average of 76.4 amps daily in the month of October. Ryan explained how "Sunny Boy," the school's solar inverter, stores and converts electricity to be used by the school.

Biodiesel production was the topic of the next presentation by UCT students Christopher Perry and Jonathan Moran. Before the actual demonstration of the production of a small batch of biodiesel, the two students explained the chemical equation they used to determine the correct amounts of chemicals required for the production of their product. Wearing safety gloves and goggles, Jonathan demonstrated the mixing of waste vegetable oil, methanol, and potassium hydroxide to produce a small batch of biodiesel and glycerin. The students mentioned that the fuel they have produced in the lab has been used to run a car engine at the school. Christopher and Jonathan were required to complete 40 hours of OSHA training to be allowed to handle hazardous materials.

Faculty advisors Nolan Leroy and Chuck Lawrence were also on hand to discuss other areas of UCT's renewable energy curriculum, including a wind turbine located on UCT's campus. Both advisors stated that one of the goals of the technical school's renewable energy program is to increase student awareness of energy independence, provide an alternative to the use of natural resources, and help eliminate pollution and greenhouse gases.

Lawrence School Science Project Mentoring Program

- Liese Siemann

For 10 years, WHSTEP has organized a science project mentoring program at the Lawrence School in Falmouth. Members of the WHSTEP scientific community volunteer their time to meet with 7th and 8th grade students and help them design and refine their science projects. Students meet with the volunteer mentors one-on-one for 15 to 25 minutes during their science class periods. This year, mentoring took place for a week from late January into early February.

WHSTEP thanks the following volunteers for taking their time to help the students at the Lawrence School.

Michele Bahr, Ben Felzer, Grant Harris, Leisa Stenberg, and J.C. Weber (MBL); Yvonna Rowinski (NMFS); Regina Campbell-Malone, Lynne Elkins, Betsy Gladfelter, Porter Hoagland, Ryan Jackson, Ulrike Riemenschneider, Emily Roland, Vicke Starczak, Tim Verslycke, and Oliver Zafiriou (WHOI); Kathleen Savage and Jared Stabach (WHRC); Pat Harcourt (WBNERR); Erin Baker and Shane Jordan (AmeriCorps); Tracey Crago (VIPS); Beth Schwarzman, Gary Schwarzman and Molly Cornell (community); Patti Parker (WHSTEP)

Volunteers Needed

for the Lawrence School mentoring program in January and February.



Scientists interested in volunteering can contact WHSTEP at

whstep-info@who.edu

for more information

WHSTEP's Annual Meeting "Live from the Poles"

- Arlene Hanlon

It's the International Polar Year (IPY) and what could be more timely than a talk by Chris Linder, research associate at WHOI and project manager for the Live from the Poles expedition. Mr. Linder, just back from the first of the polar region expeditions, was the guest speaker at WHSTEP's Annual Meeting held on May 16th at the Woods Hole Oceanographic Institution. Mr. Linder described this NSF-sponsored project as "a historic landmark in science exploration." An online component of the expedition will feature live coverage with presentations by the scientists, rather than just sound bites. Audiences visiting eight participating museums, including the Museum of Science in Boston, will have an opportunity to communicate with scientists while they are at the Poles.

Over a two-year period, from March 2007 through March 2009, four expeditions are planned to the Arctic and Antarctic. Mr. Linder plays the part of the visual storyteller. In his role as the Polar Discovery photographer, he will help educate the public and take them behind the scenes during these polar expeditions. The web updates will focus on the research itself, the researchers and what motivates them, and visual and narrative presentations about the polar environments.

The website *PolarDiscovery.who.edu* is extensive in its coverage and explanation of the research expeditions. The website includes day-by-day journal entries by scientists, a discussion of the geography and ecosystems of the polar regions, a "Polar Mail" page where people can e-mail scientists during the expeditions, and very interesting timelines showing the history of Arctic and Antarctic exploration by ancient Greeks and Vikings and by our present-day explorers, such as Chris Linder. Mark your calendars. The third expedition starts on November 24th, 2007.

For general information about WHSTEP and announcements about events related to science and math, subscribe to the WHSTEP listserver at:
<http://lists.mbl.edu/mailman/listinfo/whstep>

To post a message, send an e-mail to
whstep@lists.mbl.edu

For all WHSTEP questions, send an e-mail to
whstep-info@who.edu

SAVE THE DATE

Michael DiSpezio

Will be the featured speaker at the
WHSTEP Annual Meeting
on Thursday, May 8th, 2008

Excerpt from premierespeakers.com

Michael DiSpezio is one of the most recognized, entertaining and sought-after presenters at educator conferences throughout the world. In addition to offering his unique style of dynamic, theatrical, and often interactive presentations, he is a prolific author with over thirty published trade books and an equal number of science textbook co-authorships.

Michael's research science background, days on the stage and over a decade in his most noble career as a classroom teacher have produced a speaker's speaker. Exploiting his background as a science writer and educational consultant for organizations that range from the Discovery Channel to the World Bank, Michael DiSpezio carries his messages with validity and resolution.

A self-proclaimed "renaissance educator," DiSpezio has been involved in all aspects of science education. He has taught, written and developed curriculum, conducted workshops, and produced videos.

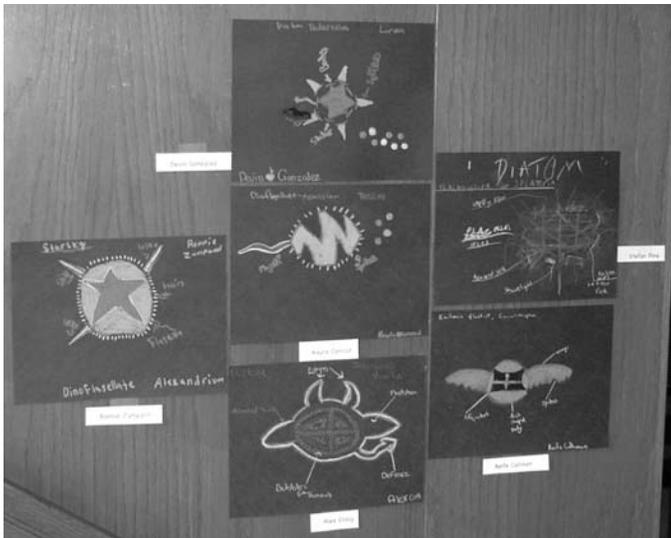
Before he entered the entrepreneurial world, DiSpezio paid his dues in the scientific community. After earning his master's in biology from Boston University, he spent six summers as research assistant to Nobel laureate Albert Szent-Gyorgyi at the Marine Biological Laboratory (MBL) in Woods Hole.



Pat Perry

WHSTEP members Janet Fields and Patti Parker discuss the Polar Discovery program with project manager Chris Linder at the WHSTEP Annual Meeting.

Sheean Haley, a research associate at WHOI and recipient of a WHSTEP mini-grant, was also a presenter at the WHSTEP Annual Meeting. Ms. Haley's goal was to use WHSTEP funding to explore a multi-disciplinary approach to science with middle school students, partnering with Morse Pond classroom teacher Pat Keoughan and art teacher Aimee Maseda. The focus of the project was to present an introduction to the ocean and the role phytoplankton plays in the ocean ecosystem, while using art as a method to display this knowledge.



Sheean Haley

The four-day classroom project was multi-faceted. Students learned about ocean food chains, explored the differences between zooplankton and phytoplankton forms and functions, used microscopes to examine live plankton, and discussed the importance of these organisms in the daily lives of humans. With this knowledge, students designed their own phytoplankton and created a system of survival for their artificial species. The art component of the project allowed students to draw their make-believe phytoplankton. The students' artwork was made into postcards and displayed at the public library. At the culmination of the 4-day project, a student commented, "this is better than television."

Ms. Haley presented a poster displaying students' artwork and a discussion of the project at the ASLO meeting in Santa Fe, NM. She has received federal funding for the continuation of this project.

WHSTEP General Meeting



Come enjoy the
Woods Hole Science Aquarium
after hours

on
Wednesday, January 16th, 2008



Patti Parker

Teachers attending the "Treasure Hunt!" safari examine maps of Cape Cod under the direction of Erin Baker, an Americorps volunteer working at WBNERR.



Answers for WHSTEParty?

(Questions found on page 1)

Who is the WHSTEP liaison?

What are Bourne, Falmouth, and Mashpee?

What are the Math and Science safaris?