Rainforest Connection Live!
A virtual field trip to a Rainforest

PRISM staffers conducted chats from a Central American rainforest February 14–17. Students in the United States talked with scientists in Panama via videoconference. This season linked classes in New Jersey, New York, Wisconsin, and Texas with researchers at the Smithsonian field station, Barro Colorado Island.

Program Demystifies Science
Created by PRISM staff at Montclair State University in 2003, the program’s interactive connection is provided by the Verizon Access-NJ video portal. Researchers present short focused lessons followed by questions from students. Video clips of landscape and native animals enliven topics such as food webs, pollination, and decomposition.

Guests include sloths, bats, beetles, ocelots and snakes.
One popular lesson focuses on decomposition and “scat cam” videos of ocelots scent-marking to communicate with their solitary mates. PRISM’s Director Dr. Jacalyn Willis and husband Gregory Willis (photo right) explain their research on ocelots.

Deep in the jungle: Technical staff for the Rainforest Connection Live!
Steve Antocucci from Verizon’s Access-NJ Video Portal in Newark and Producer George Cautero from New York swatted insects as the on-site technical team that brought the videoconferences to classrooms. The Verizon video portal staff are visible in the monitor at their site in Newark: Eric Kulmala, portal manager, and Daniel Cleary. The papers in foreground are the crib notes of the scientists, and the list of school locations participating in the next session in Texas, New York, and New Jersey.

Web Resources
All sessions are archived and can be viewed directly on a computer or downloaded as a video podcast: http://accessnewjersey.net.


Behind the Scenes
Science Comes “Live” for Bridgewater-Raritan and Newark Schools

Seeing Scientific Research In Real World Contexts: Panama

Once a year Katrina Macht pulls her tropical field clothing out of the closet at the height of New Jersey’s winter season. Macht, a fifth grade teacher at Hillside School in Bridgewater, has been hosting “The Rainforest Connection Live!” from Panama every winter since 2003. Twice she has been delayed getting to Panama because of weather, the most recent the “Blizzard of ‘06”, and in 2003 her flight back to Newark was postponed due to the “President’s Day snowstorm.”

Nasty weather aside, Macht keeps returning because “field experiences help make me a better teacher in science and ecology, and reinvigorate my lessons in the classroom.” This year she hosted seven sessions over three days on bats, snakes, and decomposition. She feels the value of the videoconference sessions is “connecting kids to scientists in the field, and allowing them the opportunity to talk with scientists about active research projects.”

Science Lessons Connected to the World in Which We Live

Hillside School participated in fifteen sessions, two of which were broadcast in Spanish. 330 students in one school experienced the positive impact of these programs. Classes from Dr. William Horton School and Abington Avenue School in Newark traveled to Bridgewater to participate in the live program. The Newark schools are Hillside’s urban partners, and meet regularly for shared lessons and projects. Macht believes that The Rainforest Connection makes learning about science meaningful and relevant to the real world. “I enjoy learning first hand from scientists in the field and exploring ways I can bring that information back to my students, some of whom may be future scientists.”
In the Classroom
This is the second in a series of articles on CUSP Outreach Team Members

Featuring Elinor Semel
By Timothy Macht

Watching Ellie Semel in the classroom, one of the first things I notice is how diminutive she is. Small with a shock of gray hair and big black glasses framing her impish face, Ellie takes control of a room not by raising her voice, but with a quiet authority. Standing amongst seated students, with one hand in her pocket, order is restored by the sense of calm control a motherly figure can impose without a word.

Ellie, the lead Science Outreach Team member, is at Mt. Hebron School in Montclair today to facilitate an activity on Bone Geometry with technology teacher Lisa Gary. Using straws and binder clips to simulate bones and the muscles that hold them together, Ellie’s lesson will “touch on physical science, biology, technology, and mathematics.”

“A textbook is support material, not the entire course.” Ellie is a firm believer in active learning. “Science teaching must be active, not passive. Lecturing is the most passive experience in a classroom.” The Bone Geometry lesson will culminate with the class discovering that the triangle is the strongest geometric shape. Squares can be strengthened considerably by adding crossbars or triangles within the square.

“At one time I had 1000 experiments in my head at any moment,” this veteran teacher says. A few years ago Ellie recorded more than 100 of these experiments in a book entitled SAFE, SIMPLE AND CHEAP. Geared toward grades K-8, the genius of the book is that simple household materials are used for all the experiments. “Students can be taught to function in a totally scientific manner easily, safely, and inexpensively.”

“Science lessons should be active, not passive.” Lacking a scientific background myself, I was curious about how and why math fits into a science lesson? Ellie referred me to the introduction of her book. “Mathematics should be integrated into the science curriculum. Science experiments and analysis should include mathematics whenever possible. Students will learn it helps make findings more objective and understandable.”

As the lesson winds down I’m reminded what Lisa Gary the technology teacher said to her class as she introduced Ellie. “She is my mentor; and she’s made me a better teacher. So you can thank her.” “Thank you Mrs. Semel,” the 7th graders say in unison. Ellie smiles and dips her head, obviously pleased by the class’s acknowledgement. “I want to thank you,” Ellie says, “you were a wonderful class.”

Bone Geometry

MATERIALS:
6 straws; 4 small binder clamps; scissors; ruler

WHAT TO DO:
You are going to construct some geometric shapes. They behave differently when forces are exerted against them. You are to determine which shape or structure is the strongest.

Cut three straws in half. Lay four cut straws on the table to make a square and then clamp each corner. Now cut three straws to obtain crossbars going from opposite corners. You will make all necessary geometric shapes from these straw pieces.

Use the straw pieces and clamps to make each structure. After you have made the structure, you will draw it on the chart. Then you will write on the chart the geometric shape(s) you see. Look at your structure carefully. Look for different geometric shapes. Record the name of the shape(s) and the number of each shape in your structure. Place the number in front of the name of the geometric shape.

Finally, write in the column on the right how strong you find the structure when you push its sides. Strength is determined by how much the structure can be pushed out of its original shape. The shape changes when the sides (straws) move. In answering this part of the lab report, compare one structure with another. Does the structure keep its shape or does it lose its shape? How hard did you push to change its shape?

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1. Was the square or triangle stronger? _____________
2. What happened to the strength of the square when you added crossbars? Why?
3. If you were constructing a door with ten boards, how would you cut them to get a square? Triangle? Why?

TEACHER NOTES: The ideas students learn in this investigation are related to the structure and strength of the bones of birds and the bones of your body. There are calcium struts inside bird and mammal bones. These struts are mainly triangular in shape and they are responsible for making the bones stronger and lighter.

“If you want to be an effective teacher, you have to keep coming up with new ideas. Every time you come up with a new idea, your students will benefit.”
PRISM and NJ SSI Partners For Change

Regional Center Guides Districts

The Strategic Planning Institutes of the New Jersey Statewide Systemic Initiative (NJSSI) are part of a program that assists districts in leading, designing, and implementing improvements. The PRISM staff, housed in the Bristol-Myers Squibb Center for Science Teaching and Learning, is the regional site that serves Bergen, Essex, Hudson and Passaic counties. PRISM supports partnerships with school districts, museums, science centers, and private industry in these four counties, providing technical assistance to improve science and mathematics education. PRISM staffers consistently guide implementation of standards-based curricula and support professional development programs for a variety of effective curricula in both science and mathematics.

Dr. Helen Earles, PRISM project evaluator, says, "Districts should be encouraged to learn and adopt this long-term strategic planning process. This is a proven procedure that overcomes indifference, resistance, and stress of change. Through strategic planning, an environment is created where the need for change is carefully articulated to stakeholders, and a process of inclusion for planning systemic change is established and implemented by consensus."

The strategic planning process begins with a representative group of stakeholders meeting with experts in educational reform. This year’s meetings included advice from Michael Heinz, the NJ state science supervisor, and Dean Ada Beth Cutler, College of Education and Human Services. The district teams were assisted in developing a mission statement from which a vision evolved. The vision is a blueprint for an improvement program that describes the type of school the stakeholders aim to develop. The vision must be reflected in the adopted core values. These values are specific behaviors and attitudes that stakeholders will exhibit district-wide. External evaluations of the NJSSI strategic planning process have listed partnership benefits as follows:

- Guidance in standards-based curricular selection and implementation;
- Effective planning for professional development, student learning, integration of technology, and administrative support;
- Access to greater resources of knowledge, leadership, and expertise from NJSSI Regional Centers; and
- Implementation of strategic plans for educational reform.

ENROLL YOUR DISTRICT FOR THE NEXT SCHOOL YEAR

District Planning That Works

Refocusing the Curriculum to Ensure Change

Barbara Weller, Coordinator of Mathematics for the Teaneck School District, is a firm believer in the NJSSI curriculum planning process. Spanning a long career as an educator and administrator, she has many years of experience in district-wide planning of curriculum.

Six years ago she was a member of a small group who met with PRISM staff at Montclair State University to design district reform projects.

“It wasn’t until I worked with the NJSSI Center at MSU and learned the planning method, that the whole process made sense.” After working with PRISM staff, the district team members went back to their districts as leaders in various disciplines that were targeted for change.

“Planning that emanates from the goal gives focus and power to the process and the curriculum itself. When you identify the district-wide goal and plan, you are looking at it systematically as well as systematically. This is what makes it so powerful.”

As a force in the district planning process, Weller works with representative stakeholders including fellow educators, administrators, parents, local business owners, and even town residents who do not have children in the school district. “Engaging in a strategic planning process gives greater depth to the kind of education the district provides, which adds value to taxpayers’ dollars. When you give people insight into the goals and desires of the district, you make allies.”

Workshops tailored to the needs of participating school districts, are extensions of PRISM’s strategic planning process. Weller is pleased with both the planning process and the technical assistance provided by PRISM staff to improve math and science education. “Knowledge trumps ignorance every time.”

District Goals Clear to All

PRISM

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