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CIESE "Global Water Sampling Project" supported by United Nations

HOBOKEN, N.J. — For the past two months, some 4,000 students from 18 countries have teamed up to test local freshwater sources, and learn from each other, under a unique science education project developed by the Center for Innovation in Engineering and Science Education (CIESE) at Stevens Institute of Technology.

Designed to compare the water quality of local rivers, streams, lakes or ponds with other freshwater sources around the world, the project provides young scientists with a window on distant parts of the world through the Internet, with its wealth of reference materials, online discussion groups and the project's eye-catching photo and video galleries.

The Global Water Sampling Project, first undertaken in 1995, and supported more recently by the United Nations Environment Program (UNEP), is implemented twice yearly – in 2004, from late March through this week, to coincide with the observance of World Environment Day, and again from mid-September through November.

The students, who range in age from 6 to 18, have been able to work together via the Internet and conduct real-world scientific investigations. They are asked to assess the quality of water based on analysis of the physical characteristics, chemical substances and the identified macroscopic life – the scuds, mayflies and bristle worms of the world.

They have also been able to share stories about their local community's water, how it is used, and how it may be misused. Most importantly, they are asked to look for the relationships, trends, similarities and differences among the data collected by all their fellow young scientists.

The project has three related, but age-appropriate, levels.

In "Bucket Buddies," the youngest students, from ages 6 to 11, investigate the ponds near their schools to identify the local freshwater macro-invertebrates, such as mayflies and snails, which are visible without the aid of a microscope. The students then share what they find with the other project participants around the world and see if they found the same organisms. (See www.k12science.org/curriculum/bucketproj)
In "Take a Dip: The Water in Our Lives," students from ages 9 to 12 test and compare the water qualities of local freshwater sources with those of others around the world, analyzing the basic physical characteristics and chemical substances, in addition to identifying the small organisms found there. (See www.k12science.org/curriculum/dipproj/en)

In "The Global Water Sampling Project," high school students perform assessments similar to those intended for younger age groups, but at a more advanced level. Students submit data (temperature, pH, dissolved oxygen, nitrates, phosphates, etc.) to the project web site and the results are posted in a database for all participants to examine. During the project, students discuss their questions, findings and theories with other participants. (See www.k12science.org/curriculum/waterproj)

At all three levels, students look for relationships and trends among the collected data. For the past week or so, each participating group has begun posting their conclusions in a final report on the respective project's website.

" Global telecollaborative science projects, such as these three water sampling projects, provide a forum for students from around the world to work together on important topics of interest to them and their own communities, while fostering geographic and cultural awareness of their distributed research partners," said Beth McGrath, Director of CIESE. "Moreover, these types of projects engage students in conducting real science investigations and in using technology tools for analysis, problem-solving, and international collaboration – all important 21st century workforce

skills."

But the project is not just about classroom laboratories and local field trips. The website also provides teachers with extensive classroom materials, not just in the related areas of earth and environmental sciences and chemistry, but also in mathematics, language arts and the social sciences. It also encourages the more advanced students to make the link between local water conditions and local water policy-making, identifying some basic public awareness and political action tools.

CIESE and UNEP have agreed that the final reports of each school's project will be posted on both organization's website each June in connection with the annual observance of World Environment Day (June 5).

The 18 countries involved in the most recent phase of the project are: Argentina, Australia, Brazil, Cameroon, Canada, Colombia, England, Guyana, India, Iran, Mexico, New Zealand, Nigeria, Peru, Poland, Romania, Scotland and the United States.

CIESE was established in 1988 to help bring the Stevens' technology experience to the K-12 sector. The Center has pioneered the development of award-winning, Internet-based lessons for schoolchildren. It has already helped train more than 20,000 teachers of more than a quarter of a million children in the United States and abroad.

The United Nations Environment Program (UNEP) was established in 1972 and is based in Nairobi, Kenya, with regional and specialized offices around the world, including in Washington and New York. It provides the voice for the environment within the United Nations system. With the slogan "Environment for Development," UNEP aims to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations. Additional information may be obtained from its web page at www.unep.org.

For more information, please contact, at Stevens Institute of Technology, Joshua Koen, Internet Science Education & Latin American Program Specialist, CIESE, 201-216-5045, jkoen@stevens.edu.

Established in 1870, Stevens offers baccalaureate, masters and doctoral degrees in engineering, science, computer science, management and technology management, as well as a baccalaureate in the humanities and liberal arts, and in business and technology. The university has enrollments of approximately 1,740 undergraduates and 2,600 graduate students. Additional information may be obtained from its web page at www.Stevens.edu.

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