



# Hudson River Summer Program for Teachers 2006



Wallerstein Collaborative for Urban Environmental Education  
Department of Teaching and Learning  
Steinhardt School of Education  
New York University

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## **Project Title: 2006 Hudson River Estuary Teacher Education Project**

**Final Report: January 31, 2007**

### **Introduction**

With support from the New York City Environmental Fund the NYU Wallerstein Collaborative was able to continue the teacher's summer program for a third year. The program expanded to 12 new schools and provided professional development for 15 additional teachers. The program also allows us to continue to support teachers and schools from previous years so that we continue to enlarge our network while strengthening bonds with former participants.

### **Participants**

Last spring we received 20 applications from K-12 teachers, even though our outreach was launched in June. Of these, 5 teachers could not participate due to scheduling conflicts. This year's cohort included teachers from public and private schools from Brooklyn, the Bronx, Queens, and Manhattan and Westchester. The cohort was evenly distributed in terms of elementary, middle school, and high school level teachers. The group included two pre-service teachers; one of which was preparing for elementary education and the other preparing for secondary science education. We also had three elementary science cluster teachers; science cluster teachers provide science instruction to almost all classes in their schools, thus increasing the number of students served by several hundred. We continue to integrate K-12 teachers because we have found that this approach allows teachers to not only get acquainted with standards and issues across the grades but also develop a better understanding of students and the kinds of school experiences they have at different levels. A list of schools is provided in Appendix A.

### **The Program**

Drawing from our past experiences we strengthened the curriculum and included field projects and activities that have been successful in the past and are easily adapted into classroom curriculum. Highlights of this year's itinerary included trips to the South Street Seaport, a sail on the Clearwater and a "Snap Shot Day" training facilitated by DEC's Steve Stanne and Maggie Turrin from Columbia University's Lamont Doherty Observatory. We also included a trip to the Intrepid where teachers participated in a variety of Hudson River water-related activities. Guest speakers included Yigal Gelb from NYC Audubon and Tony Hiss, author of *H2O: Highlands to Ocean*.

Over the past three years we have learned that water quality testing is something that the teachers feel is important and transfers easily into classroom curriculum and supports learning standards in mathematics, science, and literacy. Using Pier 45 as a laboratory, all participants learned water quality testing techniques and also became familiar with the

protocols required in order to participate in DEC's Snap Shot Day monitoring. This recurring water quality testing theme was re-visited throughout the program at various sites that we visited. For complete itinerary see Appendix B.

Each teacher received a stipend and a wealth of materials as well as the Hudson River binder which includes maps, lesson plans, articles, and materials for classroom use. One classroom teacher received 3 graduate credits for the course and one pre-service teacher received credit toward her required 100 hours of pre-student teaching field experience.

### **Building the Network**

One of our long-term goals is to build a network of Hudson River teachers engaged in studying the Hudson and related themes in their classroom. Three years into the program we can see the impact we are having on building the network. The following illustrate the connections and how our program serves as an initial foundation for further growth of teachers.

#### **University Neighborhood High School**

Last spring we began a collaboration with the Institute of Ecosystem Studies (IES) in their "Changing Hudson" initiative. As a result, one of our teachers from the class of 2005 (year two) from University Neighborhood High School was awarded a Hudson River Fellowship with the Institute of Ecosystem Studies this past summer. She spent three weeks conducting research and developing curricula on *The Changing Hudson* initiative, to bring back to her classroom. She also sponsored one of our pre-service teachers from summer 2006 in her class this fall which gave our student teacher an opportunity to observe a Hudson River teacher in action! As part of her ongoing work as a Fellow, she will be presenting a module in March at IES to 10 new teachers. We hope to have more of our high school teachers involved in this initiative as part of our ongoing commitment to professional development.

#### **Graduate Internships**

During 2006, Jessica Jones, an NYU graduate student complete her internship at the High School for Environmental Studies. As one of our staff educators, she also supported our efforts to work with teachers in schools. She provided staff development for teachers and also put together a resource book on water for teachers at the HSES. She remained at the HSES for an entire year, developing a program for World Water Week that impacted on the entire school! She not only supported the efforts of our Hudson River teacher at the school, but also provided support for numerous teachers engaged in environmental projects including the Living Machine project in collaboration with students from the University of Vermont. Last summer she joined us on the Clearwater expedition and was able to assist with various aspects of the program.

## **DEC's Snapshot Day**

This year we had our best turnout for Snapshot Day yet. Thirteen of our Hudson River teachers from seven different schools participated in Snapshot Day! In all, we had about 230 students involved as a direct result of our summer program and training (Table 1).

Snapshot Day is a program initiated by the New York State Department of Environmental Conservation (DEC), Hudson Estuary Program where water quality testing is performed up and down the Hudson River from Troy to New York Harbor. The data is then used to create a picture of what 'a day-in-the-life' of our estuary looks like. This data collection day is designed to celebrate the Hudson River Estuary and educate participants on the uniqueness of our estuary as part of the annual recognition of "National Estuaries Week."

Since 2004, we have been able to involve our Hudson River teachers and their students in this program. Each teacher brings their class to a site along the estuary and takes part in data collection. The parameters that are typically focused on include salinity, turbidity, pH, dissolved oxygen and temperature of the air and water. Students are also asked to take note of the physical characteristics of the area--what types of wildlife they may encounter, what the shoreline looks like, and what types of boats or barges they see. This data is then sent to the Hudson River Estuary Program, where it is compiled and posted on the DEC website.

Our teachers were situated up and down the Hudson at six different sites ranging from the Pier 45 to the Verrazano Bridge to Red Hook in Brooklyn and on the East River. One teacher from P.S. 91 in the Bronx, traveled all the way to Brooklyn with her twenty-two fifth-grade English Language Learners (ELL) students to work with the Urban Divers and had the opportunity to test for heavy metals in addition to the other parameters.

Wallerstein staff worked with the New York City Soil and Water Conservation District and graduate students from NYU's Environmental Conservation Education Program to set up stations at Pier 45 where three teachers and seventy-eight students from P.S. 3 participated in Snap Shot Day. We were also joined by one of our high school teachers and students from Washington Irving High School. The "stations" model enabled students to collect data on temperature, salinity, turbidity, pH, and salinity. As a result, we have begun developing activity sheets with teachers to share with each other on testing for the various parameters. These activity sheets will be posted online for use by all.

In addition, Dr. Robert Wallace of NYU, joined Trevor Day School at Pier 40 where third graders worked with The River Project staff to collect data.

Table 1. Teachers Participating in Snap Shot Day and Locations

School	Number of Teachers	Number of Students	Testing Site
Fort Hamilton High School	1	10	Verrazano Bridge
James Baldwin School	1	35	Chelsea Piers
PS 3	3	78	Pier 45
PS 91	1	22	Gowanus Canal
Trevor Day School	4	56	Pier 40
University Neighborhood School	2	19	Stuyvesant Cove Park
Washington Irving High School	1	17	Pier 45

Another group collected data from Chelsea Piers with the assistance of one of our former Hudson River teachers. The participation level of our teachers in this event is a strong indicator of how successful we have been in providing teachers not only with the skills for water-quality monitoring but also with the motivation to extend the experiences to their students and assist other teachers in participating. Furthermore it is an indication of how the network is growing to include other partners, organizations and resources across the estuary.

**The Need For Continuing Support For Teachers**

At our follow-up teacher meeting on January 25, our teachers talked about resources they have found useful and other professional development activities they would like to participate in. They especially would like to meet at venues where they can explore first-hand resources available to them and their students. Teachers brought samples of student work and we have created a bulletin board display at NYU in the Department of Teaching and Learning to share with our colleagues and other students.

We realize that teachers have little time for meetings, however, we continue to seek ways to create a forum for teachers to share their work, discuss curriculum ideas and support

each other in their efforts. Jackie Augustine from University Neighborhood H.S. shared her experiences and work with the Institute of Ecosystem Studies at our teacher's meeting. We also began a mini-book publishing project where each teacher will create a book on the Hudson River Estuary to share with his or her students. When these "teacher books" are completed we will use them in future summer programs, and as part of our ongoing assessment of teacher involvement.

NYU field supervisors who visited some of our Hudson River schools this past fall came back and shared their observations of Hudson River curricula displayed on bulletin boards and evidenced in classroom activities. They immediately associated the work in these schools with our summer program and were impressed by the level of engagement of students and teachers.

### **Conclusion**

Our efforts thus far have launched visible curriculum change in schools and teachers are more willing to incorporate environmental education activities and projects into their curriculum. As we continue to develop this program we realize the importance of having additional staff to provide ongoing technical support to teachers during the school year. Now that we have a critical mass of teachers we will begin to consider ways to further our capacity-building efforts by creating a framework for teachers to share their work and their experiences with each other.

We will continue to seek funding to support our efforts in the classroom and in the field. During the coming months we will begin reviewing the curriculum projects developed by teachers thus far. We will post exemplary lessons on our website so that they might be accessed by all and used to spawn further curriculum development projects.

Our budget this year supported fifteen teacher stipends. With funds from NYCEF we were able to cover stipends, supplies, transportation to sites and other program-related costs including partial cost of teaching staff. A breakdown of expenses is included in Appendix C.

The program has increased its visibility and has established a reputation for providing high quality professional development opportunities to classroom teachers. Final evaluations reveal important insights into how the program impacts on teachers' knowledge and skills. In the words of some of our participants:

*I believe the effectiveness of this program stems from the fact that it sells a concept- not a product. An effective concept that teaches us as humans; reminding us of a fragile environment that sustains us along with the notion that we have to sustain it right back! This reminds me of my responsibility, the one I accepted when I decided to become a teacher... I have come to the realization that even though I teach science, I'm really not teaching science*

*unless I do so in its natural setting. The Hudson River is not only home, but it's as natural as it gets, and my new responsibility is to make it accessible to my students.*

An elementary teacher writes:

*This program has instilled in me the importance of two things:*

- 1) Inquiry learning: teacher's role is not to feed facts but rather helping the students to think. We need to facilitate good questions and support the students in discovery.*
- 2) Outdoor education: students learn best by being in and part of the environment.*

A science cluster teacher talks about her own process into inquiry:

*The program has given me a wealth of knowledge that has increased my inquiry skills. I am now asking questions constantly, researching information, asking more questions, researching conclusions, planning, revising, researching and thinking about my responsibility to the environment. I plan to transfer these new ideas and inquiry skills and awareness to my students.*

A high school science teacher makes connections between the Regents Chemistry curriculum and the summer program:

*This was one of the best professional development programs that I have participated in! I have learned so much about the Hudson River Estuary, as well as, ideas and strategies of how to share that information with my students. I feel that studying the Hudson River as an ongoing theme throughout the Regents Chemistry curriculum will be a great way to motivate my students. I, also, have been motivated by this program to seek more information and to develop inquiry based lessons that will excite my students.*

Given the overwhelming positive response, we have begun to consider other ways of implementing the program and reaching a wider audience. This may include 3-day modules or special workshops for our partner schools. Other ideas include working with other colleges and universities to share resources and students. The program is still in its infancy but we have made much progress and hope to continue to develop and grow. We thank the Hudson River Foundation for its continued support and look forward to future collaborations.



**Trevor Day School Collecting Data at Pier 40 on Snap Shot Day**



## Appendix A

Summer 2006 teacher participant schools:

### **Manhattan**

P.S. 8

P.S. 33

P.S. 161

Trevor Day School

Washington Irvington H.S

The Lillian Weber School

### **Bronx**

P.S./M.S. 95

P.S. 91

P.S. 41

P.S. 64

### **Queens**

P.S. 7

### **Brooklyn**

Fort Hamilton H.S.

### **Pleasantville**

Heathcote Elementary School

