

Pilot study results.

Teachers participating in a pilot study of the Hudson River Plume (HRP) module provided valuable insight about their experiences with both the module and student learning. The lessons were piloted with 18 teachers from 11 states and Costa Rica, including representatives from nine middle schools, six high schools, one community college, and one elementary school. Teachers taught in a range of rural, urban, and suburban schools. All teachers participated in a two-day professional development workshop with the design team, and collectively taught 658 students using the HRP module over the 2008–2009 school year.

As part of the pilot, two of the teachers administered a pre- and postwritten assessment to their students. The assessment included short-answer and multiple-choice questions about the core concepts of the unit. Our analyses of the assessments suggest that students ($n = 42$) showed significant knowledge gains related to the concepts of watershed dynamics, density, and nonpoint source pollutions, using Wilcoxon Matched-Pairs Signed-Ranks Test ($W+ = 7.50$, $W- = 895.50$, $N = 42$, $p < = 2.941e-08$). Students showed higher posttest scores than pretest scores.

Teachers reported that students enjoyed the balance between the online and hands-on activities, and found the scientists’ personal stories exciting. They suggested including additional videos of scientists at work. Over half of the teachers (59.6%)—mainly the high school and upper middle school educators—found the module to be appropriate level for their students. Sixty-one percent of teachers reported that the design, layout, and usability was appropriate for their classroom use, and 73.6% said the module was aesthetically pleasing. Both the teachers and the students enjoyed implementing the unit, and the majority of the teachers expressed a desire to incorporate the unit into their regular curriculum.

