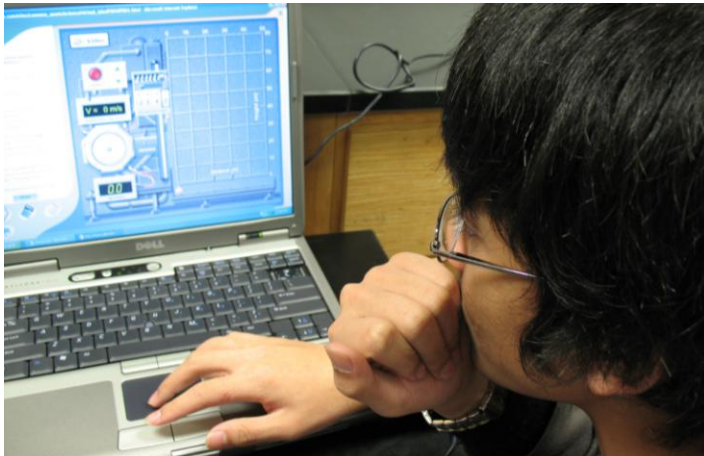


## LEARNING BY DOING: CREATING A VIRTUAL LABORATORY FOR STUDENT EXPERIMENTATION

NORTH CLAYTON MIDDLE SCHOOL, COLLEGE PARK, MD  
SCIENCE CLASS

Nezetta Smith, a teacher at North Clayton Middle School in College Park, had a double challenge, a lack of student interest in science, and a lack of funding to support creative approaches to attract students' attention. Teaching in a collaborative setting, she found that students were having trouble with reading, and many had learning and cognitive disabilities.

With a \$5,000 *Student Achievement Grant* from the NEA Foundation, she created a "virtual laboratory" to enable her students to tackle experiment-oriented problems via the Internet and



Software, video equipment, and other supporting educational tools facilitate use of the Internet for science experimentation and learning.

sparing her school the costs of maintaining a full laboratory. Her plan was to use the virtual lab to increase her students' interest in science education in the short-term and enhance their career opportunities in the long-term.

With the funding, Ms. Smith purchased science educational software, videos, a video projector, a digital video camcorder, and other supporting

educational tools to facilitate use of the Internet for science experimentation and learning. Her students used these

tools and the Internet to discover resources and other ideas to build on their own. Links to high-speed computers opened a wide variety of channels to meet almost every learning style. Trying out these environments in virtual reality facilitated learning and made group and class discussion more interesting. The benefits of using a virtual reality software based-lab include greatly reduced initial costs to computer-based curriculum in the science labs at their school.

Ms. Smith reported that project work, team cooperation, higher levels of inquiry, and the stimulation of interactive technology raised the motivation of students to apply science in their own cognitive world.

Other major results she noted were that students learned basic science concepts online.

Visual learners benefited from being guided through experiments with text and vivid animations that explained how things worked. Students completed more projects and did more labs.

Ms. Smith is extending the project by ordering subject matter for each grade level that teachers can check out to use in their own classrooms. She is working with a colleague to create a plan to include modular workstations and set up a lab. Benefits include: less classroom space used; increased mobility; and the extension of students' learning skills through the development of their own applications.



*Visual learners benefited from being guided through experiments with text and vivid animations that explained how things worked.*

The curriculum was further strengthened by using technology in the lab. It:

- Obtained learning from outside of the classroom;
- Was easily integrated in the curriculum;
- Balanced simulations with hands-on practice;
- Encouraged team work and collaboration;
- Created an open and communicative learning environment;
- Provided relevant and motivated learning culture;
- Positioned the teacher as mentor and facilitator.

The project has strengthened overall curriculum by including technology where supplies were limited. The school is using GPS standards with the technology in the virtual science laboratory so that students can merge information.

#### **NEA Foundation Grants**

*Over the past decade, the NEA Foundation has invested more than \$6.0 million in grants to support and grow the ideas of over 2,000 educators nationwide. This year, we will emphasize "green" grants, because some of our most innovative and impactful projects involve students learning about and engaging in environmental preservation and protection. From publishing books on ecological restoration to designing lessons on renewable energy, NEA Foundation grantees are getting results. (8/09)*