

2009 PHOTON PBL Dissemination Activities

PHOTON PBL principal investigators and participants have been busy spreading the word about the project at conferences and workshops across the country. Unless otherwise noted, the PHOTON PBL principal investigator team of Dischino, Donnelly, Hanes and Massa authored and delivered the presentations listed below. All listed authors were participants in the PBL program.

Note: All papers and presentations listed are available at www.photonprojects.org in the *conference papers* section.



Patrick Straight (L) and Matthew Rajock (R) demonstrate at their APS/AAPT conference presentation.

May 2009

New England Sections of the American Physical Society and the American Association of Physics Teachers APS/AAPT

PHOTON PBL participant Gary Garber, a physics teacher at Boston University Academy, and two of his students, Matthew Rajock and Patrick Straight, presented *Optical Integrating Sphere and Measuring the Intensity of Light Bulbs*, their experience with implementing the *Watt's my Light?* PHOTON PBL Challenge, at the 2009 Joint Spring Meeting of the New England Sections of the APS and AAPT. The May 8 and 9, 2009 meeting offered 50 presentations and was attended by more than 125 educators. It was held at Northeastern University in Boston, MA. Garber and his students' participation in the conference was funded through a Conference Experience for Educators (CEE) grant (see page 6 for more information about the grant) from the Electrical, Communications and Cyber Systems Division of the National Science Foundation.

July 2009

Education and Training in Optics and Photonics ETOP

PHOTON PBL Principal Investigators Fenna Hanes, Judy Donnelly and Nick Massa presented three of the 77 papers delivered at the ETOP conference held July 5-7, 2009, at Technium OpTIC in St. Asaph, Wales. United Kingdom. ETOP is a joint event organized by SPIE, OSA, IEEE/LEOS and ICO. Donnelly's presentations included: *Optics in Eastern Connecticut*, and *Creating and Using Industry Based Problem Based Learning Challenges in Photonics: Lessons Learned*; Massa presented *Problem Based Learning in Photonics Technology Education: Assessing Student Learning*.

The biannual international conference brings together leading optics and photonics educators to discuss, demonstrate and share new developments and approaches. In all, 95 educators from 23 countries attended. Countries represented included:

Algeria	France	Russia
Australia	Germany	Spain
Brazil	India	Thailand
Canada	Ireland	Tunisia
China	Korea	United Kingdom
Czech Republic	Portugal	USA

More than 70 presentations were given and 10 poster sessions were displayed, including the winning posters submitted by U.S., Greek and Romanian middle and high school students who participated in a *Light in our Life* competition. The contest asked students to combine both their science and art competencies and was organized by an international committee including Professor Donnelly.



Fenna Hanes (L), Nicholas Massa (C) and Judith Donnelly (R) at ETOP in Wales.



Michele Dischino shows an excerpt from a Challenge during a presentation at HI-TEC.

July 2009

**High Impact Technology Exchange Conference
HI-TEC**

PHOTON PBL Co-Principal Investigator Nick Massa of Springfield Technical Community College (MA) and consultant Michele Dischino from Central Connecticut State University co-presented a session titled *Problem-Based Learning in Technology Education* at HI-TEC, held July 19-22, 2009 in Scottsdale, AZ.

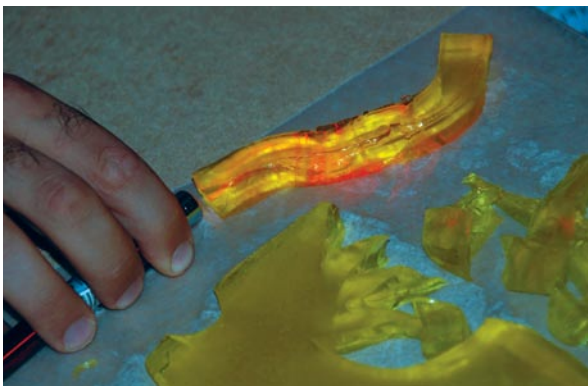
HI-TEC is the first national conference on advanced technological education where both the faculty who teach technicians and the technicians themselves meet to update skills and knowledge. There were 18 workshops and pre-conference sessions as well as 34 presentations, 38 exhibits and three industry tours for the more than 500 educators. HI-TEC is offered by a consortium of NSF Advanced Technological Education centers and projects, with contributions from corporate and industry partners.

August 2009

**SPIE Optics & Photonics Conference
SPIE**

PHOTON PBL Principal Investigators Fenna Hanes and Judy Donnelly attended SPIE's annual *Optics & Photonics* conference held in San Diego, CA, from August 2-6, 2009.

Donnelly presented *Outreach Magic*, a hands-on workshop attended by an international group of students and educators. She also presented her paper *An Optics "First Year Experience" Course for Community College Students* during an Education session on August 3.



An educator in Donnelly's *Outreach Magic* workshop gets hands-on experience with the *Exploring Refraction* exploration for future classroom use. (Photo used with permission of Ryan Hannahoe.)

Three PHOTON PBL participants also presented during the education session. Pamela Gilchrist, a science-technology specialist at the University of North Carolina at Raleigh's Science House, presented *A Case Study Findings of PHOTON Problem Based Learning (PBL) with Photonics Outreach Programs*. Presentations by Gary Beasley and Brian Belcher were funded by CEE travel grants. (For more on the CEE grant, see page 6.)

Fenna Hanes received the Educator of the Year award "in recognition of her leadership in several NSF-AATE programs, and her unflinching enthusiasm for optics/ photonics technology. Ms. Hanes has fostered the growth of optics education in secondary schools and colleges throughout the United States."



Fenna Hanes (R) is presented the SPIE Educator Award by Dr. Ralph James (L), SPIE president elect for 2010.

Complete List of 2009 PHOTON PBL Dissemination Events

January 2009

Joint Mathematics Meetings of the American Mathematical Society (AMS) & Mathematical Association of America (MAA)
Washington, DC

A Math Teacher Sees the Light

Authors: June Decker with students Waldemar Cruz and Bryan Manchester, Three Rivers Community College, CT.

Association for Science Teacher Education (ASTE)
International Conference

Hartford, CT

Problem Based Learning in STEM Education

Presentation and Posterboard

March 2009

National Science Teachers Association (NSTA)
National Conference on Science Education

New Orleans, LA

Problem Based Learning:

A Practical Approach for STEM Education

Teachers for a New Era Workshop

University of Connecticut, Storrs, CT

Problem Based Learning in STEM Education

April 2009

12th Annual Massachusetts Community College
on Teaching, Learning and Student Development
Springfield Technical Community College, MA

Problem Based Learning: A Practical Approach for STEM Education

May 2009

American Association of Physics Teachers New England
Chapter Meeting

Northeastern University, Boston, MA

PHOTON Problem Based Learning Challenges for Photonics Education

New England Fiberoptic Council's *FiberFest* Trade Show
Holiday Inn, Boxborough, MA

Exhibit table

July 2009

ETOP (Education and Training in Optics and Photonics)
Wales, United Kingdom

Creating and Using Industry-Based Problem Based Learning Challenges in Photonics: Lessons Learned

Problem Based Learning in Photonics Education: Assessing Student Learning

HI-TEC (High Impact Technology Exchange Conference)
Scottsdale, AZ

Problem Based Learning in Technology Education

August 2009

SPIE Optics & Photonics Annual Conference, San Diego, CA
*An Optics "First Year Experience" Course for
Community College Students*