

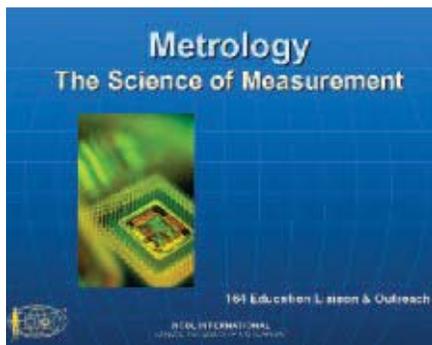
Resources for Metrology Ambassadors

by Christopher L. Grachanen

Continuing our theme on Metrology Ambassadors and the important role they play in helping get the word out about the Metrology field to young people and other folks not familiar with it, I would like to discuss various resources that are available for Ambassadors. The aim of these resources is to assist Ambassadors in conducting Metrology outreach activities by providing materials and handouts conveying the essence of the Metrology profession and relating the message of challenging and rewarding career opportunities awaiting prospective Metrology candidates.

I would like to begin by first talking about the NCSLI website for Learning and Development at: www.ncsli.org/training/index.cfm.

This site provides an overview of NCSLI's Learning and Development programs as well as the Strategic Framework from which NCSLI training, education and outreach initiatives originate. The four committees comprising NCSLI's Learning and Development program are: 161: Training Resources, 162: Financial Resources, 163: Workplace and Professional Development, 164: Education



Metrology, The Science of Measurement Presentation

Liaison and Outreach. Information about each committee may be found at the aforementioned website.

To assist Metrology Ambassadors in presenting the Metrology career field to students and other groups at outreach gatherings, NCSLI created a PowerPoint entitled *Metrology, The Science of Measurement*. This presentation starts off with a historical perspective of the Metrology field and then fast forwards to today, citing many examples of how Metrology affects our daily lives and explaining basic Metrological concepts. Special



"Careers in Metrology" Flyer

emphasis is given to the various industries where Metrology professionals are essential to providing services and creating and maintaining products. The *Metrology, The Science of Measurement* presentation is in MS PowerPoint format and may be freely distributed to interested parties. Copies may be obtained at: www.ncsli.org/training/education.cfm.

One of the most commonly used vehicles for conveying information to individuals and groups is via flyers and brochures. NCSLI's outreach flyer "Careers in Metrology" provides a macro overview of the Metrology profession and relates some of the challenges and opportunities available to those considering a career in Metrology. The flyer was created to entice people (especially young students) to learn more about what it takes to become a Metrology Professional, what activities Metrology professionals are engaged in and to convey a general outlook perspective. The "Careers in Metrology" color flyer is in PDF format and like the PowerPoint presentation can be freely distributed to interested parties. The "Careers in Metrology" flyer is also available in a two sided color poster,

The image is a banner for "measurement education". It features a photo of a woman in a lab coat working in a laboratory. The text on the banner includes: "measurement education", "Developing measurement education and outreach resources to inspire the next generation of measurement professionals", "ncsli.org", "NCSLI International Education Liaison and Outreach", a list of bullet points: "Scholarship support for schools with measurement science programs", "Educational materials such as measurement kits, handouts, posters and flyers", "Promoting awareness of careers in metrology and measurement science", "Outreach programs supporting teachers, students and professionals", "2995 Wilderness Place, Suite 107", "Boulder, Colorado 80301 | (303) 440-3339", "NCSLI INTERNATIONAL Serving the World of Measurement", and "NCSLI International is a 501(c)(3) non-profit charitable educational organization. (CFC Code: 26683)".

where the second side announces the Joe D. Simmons Scholarship, which can be requested from NCSLI Headquarters or downloaded from the NCSLI website. Other educational resources on the metric system (SI) of measurement are available from the NIST Metric Program, www.nist.gov/metric.

To provide a more interactive, rewarding experience for outreach event attendees, Metrology Ambassadors often bring with them tools of the trade such as calipers, temperature / humidity monitors, force gauges, etc., so interested parties can experience the taking and recording of measurements and evaluation of results. Hands on activities help students better grasp Metrological concepts, instills a better understanding for what it takes to make valid measurements and makes for a more interesting and fun presentation. Typically Metrology Ambassadors borrow test equipment from their place of employment and develop lesson plans in order to bring home various aspects of a measurement process and provide a visual interpretation of measurement results. NCSLI, in an effort to assist Metrology Ambassadors with these hands on activities, is in the final process of evaluating Vernier, Inc. metrology measurement kits for just this purpose. One such kit was demonstrated by Dilip Shah during the very lively and interactive Education Outreach session at the NCSLI conference in Orlando.

Similar measurement kits have been used by other education programs, including the NIST Summer Institute for Middle School Science Teachers. The Metrology measurement kits not only will provide several measurement probes suitable for making various measurements in a classroom or lecture hall environment but will also include lesson plans for conducting experiments with the purpose of educating participants about general Metrological concepts as well as the measurement technology(s) incorporated in each device. It is envisioned that Metrology Ambassadors will be able to check out Metrology measurement kits (from the NCSLI training library), eliminating the need to 1) borrow test equipment from work and 2) develop their own lesson plans. More about Metrology kits will be presented in a future issue of **me-trolo-gist** magazine.

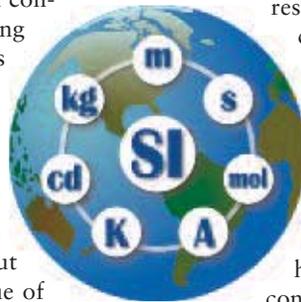
Rounding out the resources available for Metrology Ambassadors will be NCSLI's Metrology Multimedia DVD (MMDVD)



Dilip Shah demonstrates the Vernier LabQuest Measurement Kits

which, as of this writing, the request for proposal (RFP) has been finalized, posted on the NCSLI website, and disseminated to multimedia content providers for bids. The MMDVD's content will include two narrative videos, various publications and resource listings as well as hyperlinks to on-line content all in an interactive, multimedia environment. The intent of the MMDVD is to provide consumers with an overview of the Metrology field and the means to research, drill down if you will, more in-depth information about measurement sciences and schools, organizations, agencies and industries involved in Metrology related programs and activities. Funding for this important project has yet to be secured and readers are encouraged to contribute, as well as encourage their companies to contribute, to NCSLI's tax exempt Educational Development Fund. This fund provides financial resources for scholarships

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NIST Summer Institute for Middle School Science Teachers record observations using the LabQuest and temperature probes.

and education outreach projects, helping to ensure a steady stream of trained Metrology personnel for the future. More information about NCSLI's Education Development Fund may be found at: www.ncsli.org/training/financial.cfm.

The American Society for Quality, Measurement Quality Division has dedicated \$10,000 for this project and has issued a matching challenge to other organizations and potential corporate sponsors. All sponsors will be recognized on the final product when it is distributed.

NIST Metric System Resources Available to Metrology Ambassadors

The NIST Metric Program is a great source for educational materials for Metrology Ambassadors to supplement outreach activities when they visit with students and teachers in the classroom or invite visitors into their laboratories. NIST has several handouts available in bulk so that each student can receive a copy, such as metric conversion cards and wall charts that explain the history of measurement systems in the U.S. and the seven base units of the SI.

In addition, the NIST Metric Program website, www.nist.gov/metric, has numerous educational materials that can be downloaded and reproduced freely. The Metric Pyramid (NIST LC 1140) is a great three-dimensional teaching tool that teachers can use in the classroom. You can also find several resources on metric measurements that are used in sports, such as the Olympics and the Tour de France, including the 2008 World Metrology Day "Measurement in Sports" resources developed by the BIPM.



NIST Summer Institute for Middle School Science Teachers measuring resting heart rate using the LabQuest and heart rate monitor.

Requests for metric educational metric system (SI) materials can be submitted to: NIST, Weights and Measures Division, Metric Program
100 Bureau Drive, M/S 2600
Gaithersburg, MD 20899
Tel: 301-975-3690
TheSI@nist.gov

The NIST Summer Institute for Middle School Science Teachers

Collaboration between NIST and local school districts, is a two-week long workshop designed to support middle school science teachers through a combination of hands-on activities, lectures, tours, and visits with scientists in their laboratories. Planned to coordinate with the middle school curriculum, the teachers are provided with resources and instructional tools for teaching math and science, with

an emphasis on the measurement science used at NIST. Led entirely by NIST scientists, the Summer Institute translates the cutting-edge research done in the laboratory into activities intended to be carried out in the classroom.

The NIST Summer Institute has incorporated the use of the Vernier LabQuest as a teaching tool, designed to streamline the sometimes frustrating and time-consuming data collection process. Use of the LabQuest and probes enables the students to focus on what the experiment is designed to teach instead of getting distracted and bogged down in data collection. Teacher participants are given the LabQuest and a selection of ten probes early in the two-week workshop and encouraged to consider ways to incorporate the material focused on at NIST using the LabQuest. NIST scientist-presenters are loaned LabQuests and probes and encouraged to develop activities to teach their subject material using the LabQuest. Teachers return to their schools energized by the busy two weeks and with a portfolio of activities ready for the classroom as well as the supplies and equipment for those activities.

For more information, contact Mary Satterfield, mary.satterfield@nist.gov, 301-975- 5364. ■

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