The National Institute of Standards and Technology (NIST) Office of Weights and Measures (OWM) has been working the last few years toward compliance with several educational standards in support of our training program for the legal metrology and laboratory metrology community. We believe that complying with some rigorous models will help us provide excellence in our training programs. These standards include the American National Standards Institute/International Association for Continuing Education and Training (ANSI/IACET) standard for Continuing Education and Training, the Baldrige Quality Award-Educational Criteria, and portions of ISO/IEC 17024 on personnel certification. In fact, the Baldrige Quality Award criteria are presented in its publications as a framework for “performance excellence” and references “benchmarking” in several instances. So, even without applying to become an IACET Authorized Provider or to receive a Baldrige quality award, we can benchmark our operations against these documents to assess training excellence and to identify opportunities for improvement.

As we got started on the strategic aspects of applying these standards to our OWM training efforts, we began by asking the question: what does success look like? We asked our staff. We asked key customer groups. We asked training participants. We got a long list back! We matched up the list of success factors with the criteria in each of the documentary standards. It all fit! We didn’t get as complete a list from staff and stakeholders as were in the standards, so we identified a few gaps. The educational standards included a few additional items that, upon review, we agreed were important for success, even though they were not explicitly stated in the feedback we gathered.

I’d like to share six ideas of what training excellence looks like, in terms of the standards and our efforts at NIST, as well as our efforts in the metrology community. I think these concepts are important, whether you are managing staff development or are a trainer yourself. I’ve also highlighted some of the key sections of the documents as notes in case you’d like to explore these documents further.

A key question for you, as you consider the areas I’ve highlighted: How do you measure success of training? ISO/IEC 17025 for calibration and testing laboratories requires you to plan for training needs and evaluate training effectiveness. What are your measures of success in your needs assessment and effectiveness evaluation?
In NCSL International, we regularly have tutorials at the annual Workshop & Symposium and at the new Technical Exchange. These tutorials are posted online and in our program literature. Participants can also register online. The infrastructure and system at the NCSLI business office is set up to post and promote training and to track attendance and continuing education units; access to transcripts by students will be available in the future. The NCSLI business office is primarily responsible for providing the infrastructure support. The Conference Vice President and committee members are generally responsible for identifying and scheduling upcoming events. As our training efforts apply to region and section meetings, the same infrastructure is in place in the business office to support events, though the region and section coordinators are responsible for identifying training and scheduling upcoming events.

Note: ANSI/IACET Section 1, Organization, 2, Responsibility and Control, 3, Support Systems, and 9, Maintaining Learner Records. Baldrige Category 1, Leadership, Category 6, Process Management.

Success means instructors are educational professionals and subject matter experts.

In the NIST OWM, we have been providing regular professional development opportunities for our staff to become better trainers and to gain additional experience in our subject matter. We have sponsored several “Train the Trainer” workshops at NIST in the past three years and have opened up the training to others. We have also been sharing best practices on effective activities and assessment methods for our seminars – including the classroom, the laboratory, and via webinar.

In NCSLI we have been promoting our “Train the Trainer” Tutorials at the annual Workshop & Symposium and sponsoring attendance of this tutorial for our tutorial instructors. We have training resources in the NCSLI training aids library for our members to check out for free. We also have a website with “Train the Trainer” resources available and have had this regular column. I have gotten feedback from a number of our regular tutorial instructors on the value added they have gotten from these materials – and more importantly – have incorporated into their training!

Note: ANSI/IACET Section 6, Planning and Instructional Personnel. Baldrige Category 5, Workforce.

Success means we evaluate training and training programs.

Course evaluations have long been a part of what we all do. However, they have historically been little more than satisfaction-level evaluations to ask “did you like the training?” Developing a more rigorous evaluation process for each course and the entire program has been our effort in the last three years or so. We (at NIST and in NCSLI) have been considering how to better evaluate training efforts through the use of the Kirkpatrick/Phillips evaluation models. You’ll note that all of the seminar evaluations at NIST and in the NCSLI tutorials consider more than participant satisfaction levels. A key aspect of evaluation is whether or not we actually use the data to measure effectiveness of training and to identify areas for future improvement. So, at NIST, we also often conduct an after action review of the courses and consider input from both the students and instructors in identifying opportunities for change.

Note: ANSI/IACET Section 6, Planning and Instructional Personnel. Baldrige Category 5, Workforce.
At NIST, we have been conducting a follow up evaluation of students to assess application and impact. NCSLI has been doing the same thing after each annual conference. I presented a paper on this topic at the 2011 Measurement Science Conference. Summaries of data and feedback were provided for both NIST and NCSLI in the paper.


Success means we design for and measure application and impact.

When I teach a NIST training course, you will hear me say “I don’t care how much you know if you don’t apply it to your work!” But, getting participants to apply new learning for effectiveness and impact takes more than just saying a few words about doing it. Designing courses so that students get beyond the “knowledge” level on Bloom’s taxonomy to the “application” (or higher) levels takes effort and time! We have completely redesigned our OWM laboratory metrology courses with “application” levels in mind. We have selected course learning objectives that drive application. We have selected activities that allow practice at the application level. And, we assess student participation on whether they have successfully completed course objectives at the application level.

At NCSLI, we have provided guidance on learning objectives, activities, and assessments in some of our “Train the Trainer” tutorials and in mini-workshops during the conference. However, it is really up to each individual tutorial instructor to apply these concepts. We ask for learning objectives with each abstract. However, having evaluated many stated learning objectives, we still have some room for improvement in that area! Further, each instructor needs to be willing to assess students at the stated levels and not just automatically grant everyone a certificate of attendance (versus a certificate of successful completion). Instructors may not want to police this aspect of learning, but it’s a responsibility we should all take on as trainers.

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Note: ANSI/IACET Sections 4, Learning Event Planning. Baldrige Category 6, Customer Focus.

Your turn!

Training excellence means many things to many people, just as successful training means different things to everyone. However, by using the benchmark standards we can focus on some uniform factors, assess for compliance, select areas to highlight for our effectiveness, and select action items for continual improvement. I’ve shared a few of my thoughts here. Now, it’s your turn – what does training excellence mean to you? How will you assess training effectiveness for your staff? How will you assess the next training event in which you participate? Let me know.

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