This article provides some answers to questions a number of instructors and speakers have asked about the various NCSLI training events – whether the event is the annual Workshop & Symposium tutorials, the Technical Exchange tutorials, Regional Training Events, or even presentations at the annual conference or a region/section meeting.

What is the difference between a presentation and training? Ideally, all of our NCSLI events are training and learning events – whether they are branded as a presentation or a tutorial. Education and training are part of our NCSLI mission and reason for existence. But, what is the difference between a basic presentation and a training event? Barbara Busey says that “there are three primary forms of being in front of a group: presenting, training and facilitating. There is certainly an overlap in skill sets - such as dynamic delivery skills, a good stage presence, a high likeability level, the ability to “read” the audience. But while they are similar skills, they’re not interchangeable. It’s valuable to explore the differences among the three processes, so the trainer or presenter or facilitator knows how to accommodate the different situations.

• Presenting: The objective is to present information in a dynamic, interesting way;
• Training: The objective is, using engaging delivery, to increase participants’ level of knowledge or skill; and
• Facilitating: The objective is to manage the structure and focus of a team’s decision-making process.”

From an NCSLI perspective, when considering training, a trainer should present metrology or measurement concepts that enable the participants to have a better understanding of laboratory management, measurement quality, better skills in measurement analysis, or better hands-on measurement skills that they can apply on the job. A 20 to 30 minute conference presentation can certainly be designed as an engaging training event. However, it needs to specify the expectations of what participants should be able to know or do as a result of what you cover. For example, many conference presentations are about current state-of-the-art research. If presented in a typical presentation style, a participant might say “yeah, that’s interesting” at the end! If it is presented in a training style, the participant might be thinking, “I could recreate that approach and procedure in my laboratory to make improvements in our service.”

Thus, a key difference between a presentation and training event is that the speaker needs to consider the audience, level of instruction, and what they hope the participant will be able to know or do as a result. That is, participants must be able to know or do something as a result of the training.

How should I define or target the audience and level of instruction? There are a number of answers to this question. Many of the answers are up to the instructor. Some answers are going to be based on the constraints of the events. The presenter needs to know the typical or desired audience at an event, how much time is available, and whether a specific level has been requested. For example, in the annual conference tutorials, an instructor might have one half of a day, a full day, or maybe two days. What is achievable in a given amount of time might be more or less depending on the goal or objectives for the participants, the participant’s background and level, as well as how many activities will be incorporated into the event. The annual conference typically has several levels available for participants to select the ones most suited to their needs. One goal for the NCSLI Technical Exchanges and the Regional Training
Events is to provide tutorials designed at specific levels to reach target audiences, such as the technician level.

But, the target audience for a learning event might be “managers”, “researchers”, “metrologists/engineers” or “technicians”. The elephant in the room is that there continue to be disagreements in the measurement community about what each of these levels means. To one member of our community, a technician will have an advanced physics or engineering degree. To other members of the community, a technician might have a high school education, with or without an additional 15 to 20 years of hands-on experience. So, it is a good idea to use some descriptive terms to clarify what is meant when declaring an intended audience (and designing the training) so that the description and resulting material is most useful to participants and their managers. Instructors can also refer to the NCSLI Human Resources Handbook and use the levels and terminology for potential audiences that are described there. In any case, it is critical to identify the expected audience before designing the instructional approach and refining the expected learning objectives.

What are Learning Objectives again (and why do I need them)?

There have been several Train the Trainer articles in the past that have addressed the writing of learning objectives. For each conference tutorial or presentation, or even for each region/section meeting, speakers are asked to identify the expected learning objectives. This is NOT the same as an agenda or overview of a presentation. It is also not what the instructor would like to cover in the allotted time. There is a documented standard for what constitutes learning objectives. Information is available on two links on the NCSLI website (ncsli.org, Learning and Development, Trainer Resources AND Conference, Manuscript Instructions).

The ANSI/IACET standard for continuing education units identifies four categories related to Learning Objectives.

1. They are written from the perspective of the learner, reflecting what the learning will achieve.
2. Learning objectives must be clear, specific, concise, and measurable (with four sub components):
   1) They state the performance the learner should be able to accomplish. (Behavior)
   2) They specify the conditions under which the learner is to perform. (Conditions)
   3) They specify the criteria for acceptable performance. (Criteria)
   4) They are directly related to the subject matter and content of the learning event.
3. Learning outcomes are established for each session within a large event, conference, or convention.
4. Instructional delivery includes discussion of learning outcomes.

The standard format might look something like this: At the end of this “tutorial,” using “notes and the resources provided during the class,” along with hands-on opportunities to practice, you (participants) will be able to “do x, y, or z” to be able to “accurately calibrate an a, b, c.” Then, we all need to make sure they are submitted and presented in the abstract or announcement, presented during the event (for example, your second slide after the title), and that student performance is measured against this. If the instructor said they will be able to DO something, have participants been given an opportunity to PRACTICE during the session, and then are they assessed on whether they CAN DO it?

What kinds of activities are possible or appropriate for a training event?

Learning objectives, activities, and assessment methods must align to each other for a training event to be effective. Sitting in a presentation for 30 minutes or even an hour and a half is one thing, but subjecting adults to a half-day “lecture” format with a few discussions thrown in will not likely lead to a measurable ability of the participants to be able to apply something effectively back on the job.

If the learning objectives indicate that someone will be able to perform a calibration as a result of the event, reading a procedure is not an effective activity. Having a chance to actually perform a hands-on calibration during the event is a more appropriate activity. If the learning objectives indicated that participants would be able to program a software interface, the activity needs to include hands-on programming. If the learning objectives indicated that participants would be able to perform an uncertainty analysis using a spreadsheet that is provided, the activity should include actually practicing that analysis with the spreadsheet as a part of the event. Activities can be incorporated into any length event, but the learning objectives, intended audience, and timing constraints will determine the most appropriate activity.

Case studies are an effective way to engage learners when the number of learners or attendees isn’t too large. A group of twenty or so can easily be broken up into smaller “teams”; then a team leader can present the results for each team for the entire group to discuss.

Selecting the best activities is up to the instructor. But, it is also important to coordinate space, power, and audio visual requirements with the program chair, coordinator, or host for the specific event – during the planning phase!

Do I have to give a test?

No! That is, a test is not required in the traditional sense. But, some form of feedback demonstrating that your intended message was received by participants is necessary. If a presentation has a goal of informing the audience, an instructor may simply ask if there are any questions at the end of the presentation. If the presentation was being considered “training” then pointed questions could be directed to any and all members of the audience. Correct answers provide some assurance that the information was received and incorrect answers offer opportunities to expand the learning environment. Depending on the length of an event, questions and discussions can be used throughout the presentation or at each major break in subject. Considering adult learners and the desired achievement level, an actual sit-down test may not be the best method for assessing learning. So, while a traditional test is not required, some form of evaluation should be incorporated within the presentation or training event.
What Audio/Visual resources will be available?
This is up to the instructor! If a computer projector and three flip charts are needed, this needs to be defined up front during planning. If extra tables and power are needed to set up equipment for hands-on activities, it must be defined and planned. Each of the coordinators, hosts, or program chairs will ask what is needed. It is critical for each instructor to specify their requirements during the planning phase to ensure a successful learning event.

What are attendees expected to bring besides themselves?
The instructor needs to communicate prerequisites and technology requirements to the attendees. For example, it may be essential that participants bring a calculator or laptop (with appropriate software) to work on exercises. Clear expectations on student participation should be provided before they attend the workshop to enhance the learning outcomes. Event pre-work may include any pre-workshop exercise or research that they are expected to complete in advance. If there is a pre-requisite for a certain competency level, it should be clearly communicated so that the attendee is not surprised.

Most negative feedback from attendees comes from the fact that the material covered was “way over their head” or “too basic.” The lack of alignment between the level at which a course is taught and the student expectations may be due to the lack of clarity in the workshop description, poor identification of the intended audience, lack of clarity in the expected competency level, and/or failure to present good learning objectives.

How long should the training event be?
The typical lengths of NCSLI training sessions (whether at a conference, Technical Exchange, Regional Training Event, or region/section meeting) are: one half day, one full day, or two days. A number of tutorial instructors have said that they scale one full day, or two days. A number of tutorials and Technical Exchange tutorials are: one half day, one full day, or two days. A number of tutorials and Technical Exchange tutorials are: one half day, one full day, or two days. A number of tutorials and Technical Exchange tutorials are: one half day, one full day, or two days. A number of tutorials and Technical Exchange tutorials are: one half day, one full day, or two days. A number of tutorials and Technical Exchange tutorials are: one half day, one full day, or two days.

A standard NCSLI course evaluation will be available to hand out to participants to gather feedback on their satisfaction related to the event, logistics, content, and instruction, as well as to provide input on what they learned and intend to apply back on the job.

There is a point of contact for each NCSLI event. It is critical for all instructors to work with the contact person, as a member of the program team, to ensure successful learning events. Education and Training is an important part of NCSLI’s mission. Let’s all be a part of ensuring continuing success!

gharris@nist.gov