



Let's Do Chemistry Train-the-Trainer Workshop Build Your Training Module Transcript

[00:00-00:28]

Welcome to Module 5: Build Your Training. My name is Emily and I am one of the educators for the Let's Do Chemistry project. If you have not already done so, please review the welcome module, which provides background on the project and our research. In this video, we will talk about ways you can create your own training for your colleagues, volunteers, and activity facilitators based on what you have learned from the Let's Do Chemistry framework.

[00:29-01:01]

You have learned so much over the course of this workshop, do how can you pass that off to the people who will be facilitating activities? Think about who your audience might be for your training. Will it be college students facilitating activities for national chemistry week? Scientists? Volunteers? Your coworkers? Maybe this will even be a virtual training for a virtual event! Consider who your audience will likely be, and think about how you can summarize what you have learned, to best fit their needs as learners.

[01:02-01:44]

In this video we will review some standard good training processes and resources or outreach, how to use the design and facilitation frameworks in your future work, and how to incorporate evaluation into your training and activity development. As a reminder, this training you are creating should work for your trainees. Think about how much time you have with them, and what the most important things are for them to learn. It is likely that a training for outreach volunteers will look very different from a training session with your peers. Consider how you can adapt what you have learned over the last few weeks and share that knowledge to help others become better science communicators and activity facilitators.

[01:45-02:03]

Good training practices. This section will lead you through a variety of ways you can engage participants in a training. These are simply guidelines that we have had success with for our audiences. We encourage you to take these guidelines, apply them, and innovate new ways to adapt them for your audience.

[02:04-02:39]

How can you make your training engaging and experiential? Incorporating active participation into your training can increase engagement and learning potential in your participants. In the past we have used improv games to help participants get used to asking and answering questions, short and fun videos to help demonstrate ideas rather than or in addition to using PowerPoint presentations, and hands-on activities for participants to try and to practice facilitating with. How can you adapt some of these strategies to work in a virtual world?

[02:40-03:06]

You have all already brought forward some excellent ideas of how to communicate the importance of the design strategies and facilitation techniques in your online sessions, however, if you are looking for additional resources to support your training, we encourage you to visit the Let's Do Chemistry kit site and take a look at some of our training and facilitation resources where we have short videos and facilitator training activities available to download and share.

[03:07-04:03]

In our last module we discussed how to incorporate facilitation techniques into activities to increase interest, relevance, and self efficacy. So how do you communicate these good facilitation techniques to others? Facilitation is a huge part of the hands-on activity experience for both the facilitator and the participant. A confident facilitator is someone who understands their role and the goal of the interaction. To help facilitators feel more confident in their abilities, make sure they review the facilitator tip guide that reviews how to invite participation, support exploration, and deepen understanding. Demonstrating and practicing good facilitation techniques is another way to boost their confidence! Have facilitators practice these skills with peers before an event so they have time to ask for clarification and questions before interacting with the public.

[04:04-04:34]

Facilitators with a strong science background might feel compelled to overshare with the public. It's important to convey clear goals for both the participants and the facilitators. Remind facilitators who their audience will be and what their goals are for engaging in the activity. It can also be a good practice to remind facilitators we are all learning! Set goals for the facilitators as well. Perhaps they will focus on exploring together more than explaining while engaging with the public.

[04:35-05:08]

How can you encourage facilitators to support IRS? Your activity facilitators will not need the deep knowledge of IRS that you all have. However, a brief overview of how these attitudes can improve the participant experience could deepen their understanding of the activity and positively affect their interactions. To do this, you could include IRS goals in facilitator training materials such as activity write ups, and use real examples of what it means for facilitators to support IRS goals

[05:09-05:44]

Your training participants may be coming from a wide variety of backgrounds. Build a common definition of chemistry that everyone feels comfortable with and facilitators can share with participants as appropriate. For example, you can have a conversation about what chemists do and how chemistry can help us understand the world around us, solve problems, and answer questions. Everyone can learn, use, and talk about chemistry! Encourage your training participants to think about how they are chemists in their everyday lives, and how to talk with participants about chemistry in their daily lives too.

[05:45-06:12]

This step in the training process is materials-intensive, noisy, messy, and takes quite a bit of time. However, it is important that activity facilitators become familiar with the steps,

procedures, actual materials used, expected results, and possible errors in so that they can effectively facilitate the activities. This may be the facilitator's favorite part of the training!

[06:13-07:00]

One of the most crucial parts of planning an outreach event is safety. Safety must be communicated to everyone who plans on developing activities, facilitating activities, and participating in an outreach event. ACS developed a safety system called RAMP which helps you select low risk hands-on activities and eliminate high risk ones. RAMP is an acronym for the four-part risk management system designed to guide the process of information gathering, critical thinking, decision-making, and creative problem solving required to do chemistry safely. It will also allow you to make adjustments, bring supplies, and educate your facilitators and presenters to increase the chances that everyone has a positive experience with chemistry.

[07:01-08:19]

Let's review some of the key components of RAMP, and what you should be sure to clearly communicate in your trainings and incorporate into your activity development. Consider the age of your audience. Younger learners might be more prone to wanting to touch all of the materials, and older participants might become especially excited and could use help focusing on the task. Think about ways to help make everyone's experience better and integrate those practices into your training and activity guides. Be sure to consult the SDS for each of the chemicals you are using, and include those with the activity guides and training. Follow all safety procedures for transporting chemicals both within and outside of a building, and be sure the person who is in charge of this task is aware of the risks and appropriate procedures for doing so. Take home items can be a high risk situation. Be sure the item that is being taken home is given to an adult, not a child, and that the adult is given a list of what the item is composed of, and the risks associated with it. For example, a take home item of a strawberry DNA extracted in alcohol could be a high risk take home as it could be swallowed by a child. However, a watercolor chromatography bookmark could be a fun low risk take home.

[08:20-09:16]

Whether or not to use splash goggles or safety glasses is a common discussion! Think about it this way, with safety glasses, there are no risks from liquid splashes or dust. If you are using splash goggles, there is a chance that a splash, droplet, or airborne particle could get in someone's eye and cause irritation or harm. Make sure there are enough goggles or glasses provided to everyone who may be interacting with the activity - including adults and facilitators! And, be sure to check in often to make sure facilitators and participants are using them correctly. Be sure that you have a plan of how to dispose of liquid and solid waste. If you are traveling and don't know if you will have the proper place for disposal - plan to bring it back with you where you know you can dispose of it. Be sure to include in the facilitator guide how to properly dispose of the waste produced by the activity as well.

[09:17-09:54]

While these tips will be mostly used while you are planning events and activities, it's imperative to communicate the importance of safety to your activity facilitators. So how can you do that? Think about these ideas:

- Make safety a priority in activity write-ups that are provided to activity facilitators,
- Provide enough PPE for each activity,
- Create visible signage to indicate what PPE is necessary to participate in the activity, and
- Review how to properly label all materials

To learn more about safety, see "Safety for outreach settings" by ACS or look at our Let's Do Chemistry kit safety guide.

[09:55-09:59]

Let's review some training resources

[10:00-10:30]

Here are just a few examples of the resources available to you to use to inform your training. The following are all available on NISE Net's Lets Do Chemistry kit page. The Let's Do Chemistry Research to Practice Guide, the Planning and Partnership Guide, the Safety Guide, the Event Overview and Training presentation, and the short training videos. You will also find many helpful resources at the American Chemical Society's outreach webpage.

[10:31-11:06]

My name is Patti and I am a practitioner with the Let's Do Chemistry project. I hope that as you learned about the Design and Facilitation Frameworks you felt validated. After all, you use many of these strategies in your practice and have done so for years. Perhaps you even identified a few strategies that you would like to utilize more intentionally, so that the hands-on offerings you provide for the public make more of an impact. The benefit to having these strategies and techniques identified is that now you know what to tell educators, chemists, and students to practice so that they can be successful.

[11:07-12:01]

As part of your training workshop, have participants list their motivations for sharing chemistry with the public. Chemists have told me that they hope to:

- Show kids that chemistry is fun,
- Help people realize that chemistry is an important part of their lives,
- Serve as a role model so students realize they can become chemists, too.

Chemists and educators can all agree that their goals for students and the general public are encompassed by the broader goal of promoting positive attitudes toward learning chemistry. I suggest you take it a little further. Define interest, relevance, and self-efficacy and ask your team to sort their motivations in to these categories. This exercise establishes the common goals for the group and helps trainees realize that the time spent with you will

help them do what they have always wanted to do when sharing hands-on chemistry activities with the public!

[12:02-12:31]

Hi, I'm Marta, a researcher with the Let's Do Chemistry project. In previous modules, we have focused on sharing findings from what we learned through the research in this project. Since this module is all about how you could use the frameworks developed in the Let's Do Chemistry project, today we are going to share some information and tools with you for testing activities after they had been modified and for evaluating your own training workshops!

[12:32-13:39]

In case you are not already familiar, we wanted to introduce you to why you might want to include evaluation when you are developing an activity or conducting a training workshop of your own.

Just as an overview, evaluation provides an opportunity

- To test what you have created with your target audience
- Gather feedback directly from participants
- Make informed changes
- And determine whether project goals are being met

Feedback can be really helpful in determining if any changes you are making are working as you hoped, or in helping understand how you are affecting people's attitudes around interest, relevance, and self-efficacy or any other outcomes you were hoping for. Although evaluation will likely look different than it would have before the pandemic, there are evaluation strategies that can be adapted to current circumstances. We have some tools from the ChemAttitudes project to share with you that could help you collect data about your activities and trainings, particularly in regard to the framework we have been talking about over the last few weeks.

[13:40-14:44]

For activity development, we have an interview you can use with participants. This was based off of the instrument that we used to understand if and how the activities tested for the Let's Do Chemistry kit met the project goals. We are also sharing a survey that could be used to help you improve your training workshops, similar to what we will be asking you to fill out after this workshop. All of these documents will be shared on the workshop's website under additional resources. Both instruments include a mix of rating and open-ended questions to help you learn about how the activities and/or the training met your goals related to interest, relevance, and self-efficacy, as well as help you gather information on any areas of confusion, and some general feedback about the experience. Of, course, it is important to remember that when interviewing children make sure you get their parent or guardian's consent, in addition to agreement from the child!

[14:45-15:23]

We can't cover everything that is helpful to know in doing evaluation for activity development or gathering feedback from trainees. However, the NISE Network has more evaluation resources you can access to help you do your own activity and workshop testing. In particular, we'd like to direct you towards the Team-Based Inquiry guide and training videos, which cover all the stages of evaluation as well as a crash course in evaluation ethics. These links are included on this slide and also on the additional resources section of the workshop's website.

[15:24-15:30]

This project was supported by the National Science Foundation. Thank you for watching!