

Lab 7: Service Learning I

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Objectives

By the end of this laboratory, you should have developed the skills to do the following:

- Apply your chemistry knowledge to address a community problem.
- Teach non-chemists about chemistry.

Recommended Resources

- Website ~ What is Service Learning or Community Engagement?
<http://cft.vanderbilt.edu/guides-sub-pages/teaching-through-community-engagement/>
- Any material related to your project

Background

Service learning is a teaching and learning strategy that integrates community service with course objectives to enrich the learning experience. Ideally, participation in service learning will increase discipline-specific knowledge while at the same time addressing a community problem.

In our community of Bakersfield, California, K-12 students perform lower compared to other California students in science and mathematics. Additionally, we have a high level of poverty and extremely high unemployment rates as compared to the rest of the state. To combat these issues, the CSUB Chemistry Department is dedicated to promoting science education in the community. We have chosen to focus on engaging community children (a large majority of which are underrepresented minorities from low income families) in high impact learning experiences in the sciences. We hope that this will increase the number of K-12 aged students from our community that are interested in majoring in STEM fields at the college level.

In this service learning project, you will prepare a hands-on organic chemistry activity that is suitable for children and then travel to an off-campus community partner site to present the activity to local youths. You will be expected to maintain a record of your project and your experience in your lab notebook. Your team must submit a lab report that includes not only a discussion of the chemistry, but also addresses the success of the activity and your team's personal reflections.

Lab Notebook Preparation

Before traveling to the off-campus community partner site, the following items must be in your lab notebook:

1. Title of experiment & date the experiment is to be performed

2. Brief description of the activity you are performing (be sure to explain how the activity relates to organic chemistry)
3. References

Directions

1. Prepare for your visit to the community partner site at least one week in advance.
 - a. Try the activity you will be conducting to work out any kinks and to determine how many supplies you will need.
 - b. Make you sure you are well informed about the site (number of kids, age range, etc.) and know when/where you will be meeting up with your group the day of the site visit.
 - c. Plan how you will run the activity. (Note: for sites like the Boys and Girls Club and classrooms, you may want to have one person explain the whole experiment, or have one person explain the background, one person explain the procedure, etc. whereas at sites like festivals and fairs, everyone in your group should be prepared to do the activity.) Be sure to consider the age ranges of the children that you will be working with. You should also designate someone to take pictures and/or take notes during the activity.
 - d. Check to see that you have enough supplies for the number of kids you will be working with and place everything in your bin. Notify your instructor of any items that need to be purchased or acquired for your visit.
 - e. Make carpool arrangements if necessary, and ensure that each group member has the contact information for everyone else in the group in the event of an emergency. (If any group members will be heading to the site directly, be sure to obtain directions in advance.)
2. Meet on campus with plenty of time to prepare before proceeding to the site.
 - a. Make sure that your instructor has provided you with a sufficient number of handouts and directions to the site.
 - b. Collect your supply bin. (Double-check to make sure that all of the items needed for your activity are inside it.)
 - c. Collect one or both bins of common supplies. (Make sure that it is well stocked with paper towels, disposable tablecloths, surface cleaner, safety glasses, gloves, and disinfecting wipes.)
 - d. Make sure you leave with plenty of time to travel to the site and setup before you are scheduled to start your activity.
3. Once you have arrived at your site, setup before the kids arrive.
 - a. Cover any workspace with disposable tablecloths.
 - b. Make sure safety glasses, gloves, and all other common supplies are readily accessible.
 - c. Prep your experiment as needed.
4. Perform the activity with the children.

- a. Ask the kids if they know what chemistry is and if they like chemistry. You may want to do a show of hands if you have a large group. (Be sure to take notes, as this information will be helpful in writing up your report.)
 - b. The kids can get a little hyper sometimes. While at some sites a teacher, staff member, or parent will be available to help with crowd control, at other sites you will be on your own. Be prepared to have some way to calm them down and get their attention, particularly if you are working with a large group. If applicable, introduce your method and practice it with them so they know what to do. (A good example is to do the “1, 2, 3....clap 1, clap 2, clap 3 times” tactic they use at the East Boys and Girls Club.)
 - c. Provide all kids that participate with safety glasses and gloves. (Even if your experiment is not dangerous or messy, it is good to teach the kids to be safe when they are doing science experiments. Plus the kids enjoy dressing up like “scientists” anyway!)
 - d. Explain your experiment to the kids. Make sure your explanation is brief, fun, and interactive!
 - e. Help the kids perform the activity. They should do as much as possible on their own, although depending on their ages, you may need to help them measure materials, take notes, etc.
 - f. During the activity, watch the kids to see if they are enjoying the activity. You may want to take pictures to support your observations (although be sure to check if it is okay first).
 - g. Once the activity is completed, get feedback from the kids about how they liked it. Ask them if they had fun and if they like chemistry better now (again, be sure to take notes for your report).
5. Leave the site just as clean (or cleaner) than it was when you arrived.
- a. Be sure to clean up the mess thoroughly after the kids are done (don't forget to check the floor for spills).
 - b. Any safety glasses that were used must be wiped off with Lysol wipes so that they are clean and ready for the next group.
6. Return all supplies to campus as soon as you have completed your visit.
- a. Empty your supply bin and return all contents to the common storage area. Wipe out the inside of the bin if it is dirty.
 - b. Return common supply bins to their storage areas.
 - c. Inform the instructor of any items that should be restocked for future visits.
 - d. Record the observations you made during your visit in your lab notebook before you forget.
7. Let your instructor know how the trip went! Be sure to pass along any suggestions you may have for the activity and/or the overall experience.

Reporting your Results

While you should write your report according to the guidelines described in “Topic 4: Writing an Organic Chemistry Lab Report”, your report will more strongly resemble a Journal of Chemical Education article than it will a Journal of Organic Chemistry article. Work with your team of 4-5 on this report. Here are some tips for getting full credit:

1. Don't forget to explain the chemistry behind your activity in your introduction.
2. In your results and discussion, include a discussion on audience response as well as the typical explanation of the experiment to address the success of your project. Also include personal reflections (i.e, what you as a team learned).
3. Include at least one (more if necessary) picture, scheme, or table.
4. In addition to the typical experimental details, include information such as where you presented/performed the project and how many people were in attendance. Also include any observations you made regarding the participants/audience.
5. Don't forget to include all the typical aspects of a chemistry lab report (i.e., abstract, references, etc.).