Before attending the Leader Training Module: Getting Started, please read the Introduction and How to Conduct a Leader Training Session.

Section A: Introduction

The Philosophy Behind PLTL
The workshops are intended to create an environment such that the students will be actively engaged in the process of understanding and learning the material covered in class. By working together through the workshops students will become more confident in their abilities to learn and understand the material so that they will be able to solve challenging problems without depending on an answer key (Roth, Goldstein, Marcus, 2001).

The Zone of Proximal Development
Lev Semyonovich Vygotsky, a Russian psychologist (1896-1934), created the theory of the Zone of Proximal Intelligence. According to his theory, intelligence could be categorized into three Zones: what a person can currently do without guidance, what a person can not do - even with guidance, and between these two zones is the Zone of Proximal Development (ZPD). It is within this area that people could learn what was once thought impossible to them. The key to achieving this intelligence is working closely with what he called a “more capable peer” (Vygotsky, 1978, p. 86). According to Vygotsky, working with peers and with those who are more experienced in the subject, people could learn material that at the beginning seemed far too challenging. This increases the amount of knowledge that they are able to gain.

http://coe.sdsu.edu/eet/articles/vygotsky_zpd/
http://coe.sdsu.edu/eet/articles/vygotsky_zpd/zpd4_one_intro.gif
Cracolice, 2000; [All accessed on June 6, 2009]
**Using Vygotsky in PLTL**
While students are able to learn vast amounts of chemistry on their own, by working with their peers and with the guidance of an experienced leader, they can expand their knowledge and ability to learn chemistry.

**Section B: How to Conduct a Leader Training Session**

**Goals of PLTL-LT Modules**
Modules should generally be completed in 50-60 minutes. In order to meet this goal, everyone in the group will have to work together to stay on task. If the group has some extra time, a more relaxed pace can be accommodated.

**Choosing the Leader**
Each week your group will select a different person to be the leader. Choose the leader for the following week at the end of the current week’s session. The leader will be responsible for keeping the group on target and within the time limits assigned to each activity. They will help guide the group when the group is having trouble moving forward.

**The Assessor**
Each week, aside from the leader, your group will choose one person to write a short assessment regarding the module. This person should write how the module went, any problems that occurred, any positive feedback, what they would like to see changed/stay etc. This should be posted in the PLTL on-line folder.

*Appropriately Pairing Students using the ZPD*
When pairing students keep the diagram to the left in mind.
A = advanced student (understands most - all material)
I = Intermediate student (understands some – most material)
N = novice student (understands no - some material)

Larger groups should also be made up according to these ideas.
The survival game

Here is how it is played: *
1. Imagine you are stranded on a deserted island.
2. Individually construct a list of the 4 most important items you would need to survive.
3. As a group combine your lists into one top 8 list.
4. Answer the questions on the following page and discuss in your group.

* Please be respectful of your group members’ thoughts and opinions

(www.wilderdom.com/games.descriptions/SurvivalScenarios.html)

<table>
<thead>
<tr>
<th>Individual list</th>
<th>Group list</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>

1. How did your individual list compare to the group list? Similarities? Differences?

2. Did the approach to coming up with a list differ on your own and in the group? Explain.

3. What process did your group use in order to create the final list?

4. What can this activity tell you about the importance of group work?
Connecting the Survival Game to Chemistry
Individually spend 2-3 minutes on the following problem. Spend the rest of the 10 minutes working on the problem within your group. Answer the questions that follow.

**Problem:**
Suppose that you are faced with a problem similar to the one faced by Robert Millikan when he analyzed data from his oil drop experiment. Below are the masses of three stacks of dimes. What do you conclude to be the mass of a dime, and what is your argument?

Stack 1 = 9.12g  
stack 2 = 15.96g  
stack 3 = 27.36g

**Questions**

1. How does this connect to the survival game?

2. How did the approach to solving this problem change when you switched from working on your own to working in the group?

3. How does this relate to the Chemistry workshops?
Scenarios
In one of the first workshops of the semester you may encounter some of the following scenarios. Spend 2-3 minutes reading over all of the scenarios. As a group decide which scenario to discuss. The group assessor should create a summary of the discussion to speak briefly about it at the weekly PLTL faculty meeting.

1. You are in a group of 4 leaders for leader training. One leader, Jeff has been a PLTL leader for 3 semesters. You have only had one semester and the other two leaders have been PLTL students before but this is their first time as leaders. Jeff comes to the module in a bad mood. He explains that because he has been a leader for 3 semesters he should not have to do these dumb modules. What do you tell him? Who in a group profits from doing group work?

2. It is the first workshop of the semester. The students have been divided into small groups and assigned a leader—you. When you bring up the subject of icebreakers you get an overwhelmingly large groan of disapproval. Nobody wants to do icebreakers because they are “too juvenile” and “make everyone feel like they are being treated like children.” How do you explain the importance of icebreakers to the group? Can anyone cite an educational theory that would suggest that icebreakers are valuable?

3. On your first night of workshop one of the students, Amanda, claims that she learned all of this stuff in high school and doesn’t see why she needs to be here. She begins to go through the workshop quickly and claims she doesn’t see why it is so important to work in groups. How would you respond?

4. It is the first night of workshop and the leader is standing in front of the group explaining how to solve a problem. A student asks a question about the problem and the leader goes to the board to write out how to do it. What is wrong with this picture and what can you do to make the situation more conducive to group learning?
The Concept Map as a Cognitive Tool

A Concept Map is a diagram that relates various concepts to one another. They are most typically constructed by connecting concepts, enclosed by ellipses or rectangles, with lines. Concept maps are usually used to illustrate the relatedness of various topics.

**Hint:**
This exercise is very effective if leaders share the concept maps with each other, having groups write their maps on the board or on paper posted on the walls where everyone can see the maps develop.

**Tip:**
Concept maps are excellent for organizing thoughts and ideas. They are simple to construct and are great tools for understanding how different concepts and topics relate. Here is a tip: Try starting with a more general concept and continually progress toward a more specific topic. This will help your concept map be more organized and methodical.

**Instructions**
Based on your understanding of PLTL, create a concept map about the most important aspects of PLTL and how these aspects impact learning. Have the assessor keep the concept map to bring to the leader/faculty meeting. After creating the concept map answer the following questions:

1. *Were you surprised by how many ways PLTL can affect learning? If yes, why and how were you surprised? If no, what were the ways you expected PLTL to influence learning and why did you expect those results?*

2. *Were there any ways that PLTL could negatively impact learning? (i.e., slow down / impede learning?) If yes, what ways, why and how can we change them? If no, how can you continue to ensure that PLTL remains a positive learning environment?*

3. *How might group dynamics affect the success of PLTL?*
Journal Response Questions
Post your response to the following questions in the PLTL on-line conference. Please write 1-2 sentence responses for each question.

1. Give an example of a child’s three zones of intelligence. For instance, categorize a child’s abilities according to Vygotsky’s theory.

2. Why do we have PLTL?

3. How can you, as a leader, utilize Vygotsky’s theory during workshop?

For more PLTL leader tips go to:

http://www.pltlis.org – look under “Resources: Leader Training”

References and further reading


