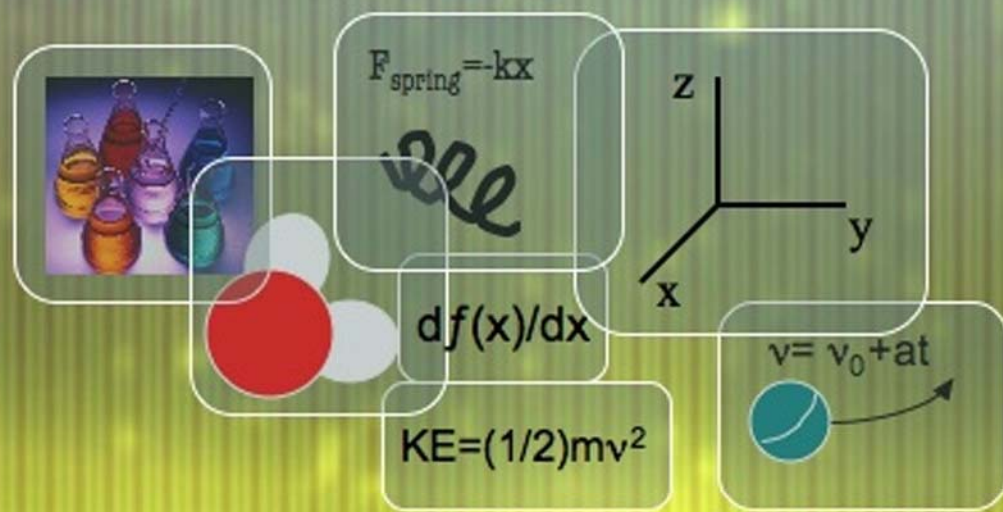




# ....Running PLTL.exe



A PLTL Handbook for Leaders  
2009

- Chemistry
- Physics
- Calculus

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## Introduction

Welcome to PLTL peer leading. Peer leaders are an essential component of our PLTL program. Without peer leaders, there is no P in PLTL.

*What is a peer leader?* At this point, you might be thinking of the peer leader primarily as a tutor. Keep in mind, however, that a tutor is one who imparts knowledge.<sup>1</sup> A peer leader, on the other hand, teaches students the skills they need to become independent learners. While you are a *peer*, or “person of equal standing” in relation to the members of your group, you are also their *leader*, or the person who guides and inspires them in their learning.<sup>2</sup>

This book, written by last year’s SAM peer leaders, will start you on your journey to becoming a peer leader. Your development into becoming a peer leader began when you participated in a PLTL group; it will continue as you participate in the SAM and PAM courses, and reflect on your own and others’ peer-leading experiences. Becoming an effective peer leading is a developmental process, and there are bumps along the way. The transition will not always feel smooth. This book is divided into sections that provide advice and for common issues that you may encounter throughout the semester.

The first step is the first PLTL session, discussed in “Logging in.” The first time you meet with your PLTL group is the most important, because it sets the tone for the rest of the semester. We have two suggestions: be “extra” prepared for this session and create an agenda. During the SAM course you will learn different strategies that your group can use to solve the PLTL problems and to become effective problem-solvers. These strategies are aimed at increasing your students’ participation and prompting discussion of the concepts used in the problems. Last year’s leaders have presented many great tips. Read them and enjoy.

In the “Creating a Network” section, peer leaders discuss their experiences in using the various strategies used to establish group dynamics where everyone participates. The following ideas stand out: you should modify each strategy to better fit your own group, and you should use multiple strategies even if one specific method seemingly fits your group the best. Be adventurous!

Remember, no one is born a peer leader. What can you do when you need to lead your group, yet you are still learning to be an effective peer leader? The third section of this book says it all: “Don’t ask me, ask Jeeves.” Remember one of the goals of PLTL is not to get the correct answer,

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<sup>1</sup> The American Heritage® Dictionary of the English Language, Forth Edition. Copyright© 2000 by Houghton Mifflin Company. Published by Houghton Mifflin Company.

<sup>2</sup> WordNet® 2.1, ©, 2005, Princeton University

but for students to engage in problem solving while discussing the concepts used in the problem. Use the strategies in this section to learn how to guide students in discussing the problems with each other.

Okay, so you are getting this peer-leading position down. It is the middle of the semester, and you are really busy with your course work. The thought comes to you that you could coast on some of the PLTL sessions, and no one would know. Think again—your group will notice the difference. How do you keep yourself excited about the sessions in the midst of the semester? This year’s SAM peer leaders come to the rescue in “Refresh.” In this section you will learn strategies for motivating students and helping them overcome the mid-semester slump.

Finally, PLTL is all about team work. As a member of a PLTL group, you probably did not realize what your peer leader was doing to make your group into a team. The peer leader is the magician behind the scenes helping each group become a community of learners. The techniques in the fourth section, “<ctrl><alt><del>,” will help you build your team and ensure that everyone has an equal opportunity to participate and engage in discussions about the problems.

We hope you enjoy this book. It is filled with wonderful hints about peer leading. When you become a peer leader, you join a community. We look forward to welcoming you to the PLTL peer-leader community and working with you this coming fall.

Regards,

P. Brown & R. Frey

**RRRRR You Ready?**  
**Cassandra Newburg**

You have just completed your first sessions of SAM and PAM and are now preparing for your first session as a PLTL leader. I hope you guys are as excited as I was! Here are a few ‘r’ tips that may be helpful for your preparation:

First things first, **relax**. You would not be here if you were not qualified enough to run PLTL in your respective course. The students will most likely be just as nervous as you are especially if they are new freshmen as the majority of the students are. It is ok to be a little nervous, but it is very important to demonstrate to your students some confidence to gain their respect. You are not expected to be an expert in the field you are leading, but clearly you have demonstrated that you know the material well and so should have some sense of confidence in your knowledge.

**Review!** Each of you has done very well in each subject, but it might have been a while since you have studied each topic. It can never hurt to review the material even if you feel that you know it very well because there may be something that you forget. Also, knowing the material inside and out will increase the ease in which you can ask helpful guiding questions to your students. If you are worried though that you never understood something in the past extremely well, do not fret! You will go over the questions in PAM with other leaders and you can work out any questions or problems you have there.

Bring **refreshments!** Although you do not want the students to expect you to bring food and/or drinks every week, having some snacks the first day might be a good thing. I have found that students like to have a little extra sugar or something to occupy them while completing the problem sets, especially if it is an early or late session. There is not a “fund” that food comes from however so it will come out of your pocket or from your meal points. If you are worried about meal points or don’t want to provide food every week, definitely tell your students the first day that they should not expect you to bring it every week. You could perhaps see if students want to sign up to bring food each week so it is not all on you.

**Regulations** (so this is sort of a stretch but the best r word I could think of)! You should start the first session and sessions after with an agenda of the session just to give your students a plan for the day. This will also establish your authority and your ability to control the sessions if

they get off track. Also laying out ground rules the first session will be good to set the mood for the sessions.

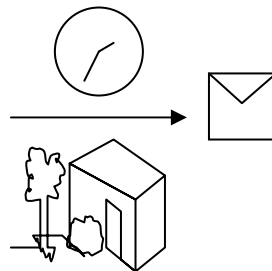
**Recess!** Another stretch, but starting off the session with a fun game or activity is definitely a good idea. The students need to work together to complete the problem sets and should get to know each other and feel comfortable with each other. This will only truly come with time, but having some breaks will help during the sessions. Basically letting them relax a bit and take breaks may become necessary so a few side conversations is ok. Also, along with the theme of recess, make sure you guys are happy and enthusiastic (as children are usually excited to go to recess) and set a positive tone for your sessions. Hopefully if you are enthusiastic and excited about the subject your students will also be motivated and excited.

I hope some of this has helped a bit! Make sure you have fun. Good luck on your first session and **remember** those five 'r's!!

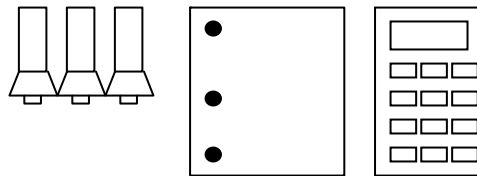
**Really  
Alfred Wang**

Really. The other papers probably do a good job emphasizing what you need to do to prepare for your first session. So because I don't want to bore you to death, yet again making sure the basics are done before the first session, I'll draw a few pictures. (Don't laugh)

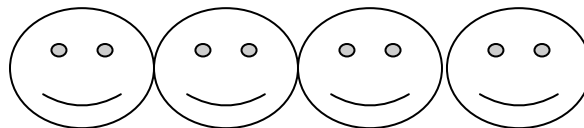
- 1) E-mail your group, tell them where you are meeting, and when. This is very important!  
So here's a clock and a picture with a tree and a bush and a building going into an e-mail.



- 2) Bring the necessities. I will draw them: You need your markers/ chalk, your problem sets (IMPORTANT), a calculator, your notebook for reference, and your brain (I am not drawing this with lines for obvious reasons).



- 3) Get to know your members from the beginning. Here's a few smiley faces for happy members.






Okay, Number Three is actually very important. Starting off the semester with the right attitude is a must. Many people suggest an ice-breaker to make people more comfortable, but I always hated those. It always felt fake. Many times ice breakers are so commonplace in first meetings, they really don't mean anything. (but hey, if you think they work, go ahead). I asked

my group members if they wanted an ice-breaker, but I got a resounding no. It kind of looked like this:

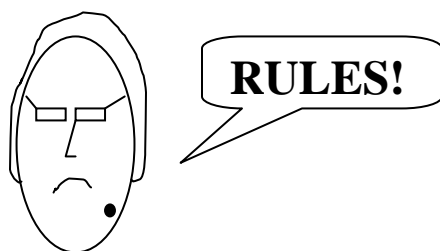
"NO"

I got them comfortable with each other just by talking with them about their fears about general chemistry. There is no reason to scare them. All it takes is hard work and a good study habit to get through Gen Chem.

Besides emphasizing number three, there are a few things that worked for me the first session. Bring food. Something like this:  or  but not  ((a turkey

that's just going overboard.) Food brings people together, and with a motivator to come to PLTL sessions, this will help later session's attendance. Food also makes your students like you more. It's already pretty hard to win them over without ever telling them the answers. Food will at least get you some brownie points (not a pun here).

The last thing I want to mention is setting the rules. This is the hardest thing to do in my case. I count myself as pretty relaxed usually, but setting rules is crucial. You probably remember in primary school how Mrs. Somebody told everyone the class rules and scared half of you to death with threats to call your parents or send you to the principal. This is what Mrs. Somebody might have looked like:



I'm not at all saying you should be this mean (and grow an ugly mole on you left cheek), but you have to set some ground rules, or PLTL will not be group learning. Respect is the most important. Not only do the members have to respect you as a leader for having taken the class,



but they **MUST** respect each other. You have to make them feel comfortable around each other asking questions. No questions are dumb, and you must emphasize/reiterate that point. Without respect, people will be afraid to ask questions, and the principles behind PLTL will be ruined. Also, you must set rules for attendance. Without PLTL, there really isn't brain trust in which the questions can be answered and new ideas thrown out. Student should make an effort to come and share their ideas. I have learned quite a lot from different student's take on different problems, and it's something that is extremely gratifying to listen. Other rules are probably talked about in the other papers, but these two are the ones I feel are most important.

So good luck with your first session, and really, don't worry about a thing; you'll do fine.

## **Getting It Right the First Time** **Robert Tennill**

As your first PLTL session rapidly approaches, you might be noticing some feelings of nervousness and doubt. What if they ask something I don't know? What should I do if nobody listens to me? How can I make my first session run smoothly? Take a deep breath and don't worry! If you think you're the only one that's nervous for the first PLTL session, you're not. The students are just as nervous, which will cause them to be on their best behavior, giving you every opportunity for success in this first session as a PLTL leader. In addition, on the off chance that your first session doesn't go as well as you may like, you have an entire semester to fine tune your skills, so don't put so much pressure on yourself. That being said, the easiest way to have a successful semester is to do things right the first time. Follow these tips towards setting the foundations of your PLTL group, and I guarantee your group will run smoothly.

First, it is absolutely crucial to be well prepared in the course material for the first PLTL session. This is more true for the first meeting than for any other. Look over old notes and past problem sets, and make sure you have a thorough understanding of the first week's PLTL problem set. It is extremely important to appear knowledgeable in the subject matter to not only gain the respect of your students, but also to be the most helpful in facilitating students' learning of the course material. As a PLTL leader we are not suppose to directly answer questions, however we demonstrate our thorough understanding of the material by redirecting and rewording the students' inquiries, as well as through asking thought provoking questions of the group.

In addition, it is completely necessary to set strong ground rules for the rest of the semester. Do not skip this step or take it lightly; the rules you set in the first session will govern your group dynamics for the entire rest of the semester. Address the important issues, making your rules well known to the group. Some of the major rules are: explaining attendance (what time students should arrive and how many sessions they are allowed to miss), emphasizing the need to notify you as a leader if they are going to be absent, discouraging talking when another student is speaking, and making sure students do not work ahead when finished with a problem. If you are unable to set these ground rules in the first session don't panic, it can still be done in

future sessions. However, the students are most attentive in the first session and therefore most likely to obey these rules if clearly discussed and given proper significance.

Finally, setting the group environment is an essential aspect of the first PLTL session. It is important to help engage the students in conversation with not only you as a leader, but also their peers. The environment you set in the first session will play a role in the success of the group dynamics throughout the semester. Arrive early and get the students involved in “small talk” before you begin the problem set. Do an icebreaker to get everyone comfortable. Finally encourage discussion amongst all students in every problem. The success in PLTL is found in the level of group interactions, which lead to a better group understanding of the course material. It is a must in this first session, to make the students feel comfortable in the group environment so that they won’t hesitate to share their opinion.

Once you have accomplished these three things in your first PLTL session, you have nothing to worry about. Do things right the first time: study hard for the first session, set ground rules, and emphasize group communication. If you do this in the first meeting the rest will go more smoothly. Finally, relax, you were chosen to be a PLTL leader because you demonstrated a high level of understanding of the course material. Your students are well aware of this, so go into your first session with confidence and have fun!

## **GET PUMPED FOR YOUR FIRST PLTL SESSION!**

**Rachel Goldfeder**

If you have ever been in a PLTL group as a student, you probably remember your first session and how awkward you felt walking in. Hopefully, you also remember how confident and comfortable you felt walking out only two hours later. That complete attitude turn around did not happen on its own—your leader made it happen. Now that job is yours; you have help your students feel comfortable working in a group setting and feel confident in their abilities. This might sound like a daunting task, but don't worry—here are some tips to help you get through your first session!

First, be confident in yourself! I'm sure it seems like PLTL leaders just show up at their sessions ready to go and everything just magically runs smoothly. However, actually is a lot of preparation that goes into each session—particularly the first one. You will be able to be confident in yourself if you are familiar with the session's content and are well prepared for the session. I suggest looking over the problem set between your PAM class and your PLTL session just to make sure you have it all down. How else can you prepare yourself for the session? I suggest that you make yourself a list of things you want to bring with you to your session. You will want to be sure to bring copies of the problem set, an attendance list, the PLTL Philosophy, notes from your PAM session, supplies for an ice breaker and for nametags, white board markers and an eraser, and of course, some snacks. Hopefully that short list will at least get you started. The easiest way to help you feel more confident as a leader is to be sure to show up on time. This will allow you to make sure the room is set up in a way you like it and you won't have to feel rushed or flustered before things even start.

So now that you know how to be more comfortable as a leader, how can you make sure your students feel equally as comfortable? Start with an ice breaker! The students may not be too keen on the idea (especially if they are freshmen and just had a week of icebreakers during orientation) but that doesn't mean you shouldn't do one. You can come up with something really creative that you may have done at a summer camp or you might stick with something simple (e.g., like having everyone say their name, hometown, freshman floor and favorite ice cream.) Either way an icebreaker gives the students (and you!) a chance to get to know everyone in the

group in a not-so-stressful academic setting. Getting the students to start talking before they have to start talking about math or science will help them be more open and at ease.

In the beginning of your first session—somewhere between doing an ice breaker and starting the problem set-- you will have to go over the group rules and the PLTL Philosophy. You will want to make sure that every student understands the PLTL Philosophy. It is important that your students know that you are not a solutions manual. They are used to getting confirmation that they are correct, but in PLTL they will have to be confident in themselves without anyone telling them they are correct. If you remind them that you won't be there with them on quizzes or tests to tell them if they are right they tend to understand this easier. After they understand the Philosophy, they should make some rules of their own (be on time, listen to everyone's ideas, etc). These should come pretty easy to them, but be ready with some basic ideas just in case. The more specific your group is with these rules- the smoother things will go in the long run.

Hopefully these tips make you feel a little bit better about going into your first session. Everyone is a little bit nervous going into their first session—but try to shake off that anxiety and just have a fun time!

## **Starting Off Strong Trent Dondero**

So. It's happening. You're going to walk into a room with a group of students, some probably much smarter than you are, and have them all look up to you, expecting you to help them and guide them to a better knowledge of the class's material. If you're like me, you're hovering somewhere between excitement and nervousness, wondering if the students in your group will like you, whether they will get along with each other. Then again, maybe you're not worried at all. And there's really no reason to worry, anyway. There are things you can do to make sure your first session runs smoothly and your group gets off to a good start.

Firstly, introductions are a must. Students become much more talkative, and your first session will have much less tension, if the students know something about you and about each other. You could: (1) Do two truths and a lie, or (2) have each student say where they're from, or (3) what dorm they live in, or (4) state an interesting fact, or (5) come up with some other ice breaker. Even though the students (the freshmen, anyway) have been doing ice breakers constantly since coming to campus, the common interests they discover by doing them really do help them loosen up.

Food can also be a big help during the first session (and in later sessions). It provides a talking point for the students, which can be a great thing, especially if your group has a lot of students who are introverted when they encounter new situations. Beyond helping with your group's dynamic, food can potentially start to establish you as a positive figure rather than a not-so-positive one.

Third, your attitude toward the group and toward PLTL in general can make a huge difference in the cultivation of a good group dynamic. If you're nervous about the session, make sure you know the week's material well, which will help you feel more confident in leading the students in the problem set. Try to be upbeat and positive about the material, and the students will follow your lead. During the first session, as the students are not familiar with the PLTL environment, you as a leader have a good opportunity to set the tone for sessions that follow. If you start out with a good attitude, it can carry a long way.

Finally, if something goes wrong – if your knowledge breaks down, or you have an issue with a student, don't freak out. Know that you were chosen to be a PLTL leader, and you are

qualified to be in that position. Take a deep breath, and use your instincts to handle the situation.  
Good luck!

**One Function of the PLTL group**  
**Jason Tarre**

When I received the email congratulating me on becoming a PLTL leader, several thoughts sprang forth simultaneously, “I get to help people learn calculus!”, “I get to review calculus!”, and, “I have a job! After coming down from that high, however, I realized I had my doubts. I was skeptical about the PLTL mantra, “Don’t let the smart kids get ahead”. Holding the smart kids back seemed counterintuitive to me. Going in, I was unsure how I would balance my desire to see my PLTLers excel with knowledge that I might have to restrain their intellect. But I reversed course when I saw PLTL from a leader’s perspective. Keeping the PLTLers together helps the smart PLTLers develop communication skills, and the less smart PLTLers get multiple interpretations of the material.

A fascinating part about life is that someone can have an amazing skill yet have trouble communicating effectively how he or she is so successful. Additionally, people learn in a variety of ways. Some need to hear, some need to see, and others need to touch. Furthermore, every way different people phrase ideas hits the listener just slightly differently. It is impossible to tell which variation will produce that “aha moment” for the listener. The subtle differences in delivery and reception are the reason that in PLTL the peer leader needs the students and vice versa.

For some reason or other, the material on the PLTL worksheet has not clicked for the student. The difficulty could be that he or she has missed lecture, skipped on practice problems, or maybe he or she has not worked with anyone yet. Or maybe the student has taken those steps without success. The PLTL group work on the weekend, however, will give the student another opportunity at the material. Having four or five additional interpretations of the material, the student might find the voice that allows him or her to see where he was stumped.

On the flip side, the peer leader has a strong command of the material relative to his or her fellow PLTLers. However, people benefit from communicating effectively with each other. The peer leader faces the additional challenge of communicating with a fellow PLTLer on an interpersonal level. The peer leader’s knowledge must be packaged and custom made for the student such that the learner gets that aha moment.

In short, keeping everyone together adds richness to the PLTL experience.



## **Creating a Network Renault Young**

PLTL works like a computer network. There are a lot of positive things when students, including the leader, gather every week to work through problems.

The PLTL leader and students in a group are dependent on one another. There is no point for a leader to lead a group of two or three people to do problem sets as there is minimal team learning with such a small group of people. The reverse is true as well. Without a PLTL leader in a group, there is a lack of order and incentive for a group of students to work through optional problems on their own without guidance. PLTL indirectly enforces students to spend two solid hours thinking about and honing their skills about a specific subject during the weekend. If it were not this mandatory session every weekend, some people may fall behind in their class. The PLTL network disciplines people to review, get caught up, and learn new stuff about certain topics of each week.

Just like what the title suggests, PLTL is a chance for participants and leaders to meet new people. Initially, the leader should be friendly and approachable and encourage students to be friendly with each another. As such, students will be more comfortable talking to the leader, asking questions during sessions, and will want to attend sessions more regularly. As time progresses, the leader should continue to be sociable to students but remember to maintain a certain level of authority so that students will respect the leader and take every session seriously. For me personally, I always get excited every Sunday before my PLTL session begins because I want to meet with students and help facilitate their problem solving and discussions. Every week I can feel that students in my session are more bonded. It is like computers getting to know each other when they are connected in a network.

The PLTL leader and students learn a great deal from the group. When a group of different people are working on the same problems, they are not always going to tackle the problems the same way. The diversity of problem-solving techniques is beneficial to students. For example, students, and even the leader, learn easier ways, shortcuts, and interesting new ways of solving a problem. Hence, it is crucial for leaders to allow students to demonstrate the

various approaches to problem solving. The PLTL network stimulates learning from one another because every member of the network is unique.

While people benefit from one another by doing problem sets together, the size of the PLTL network is kept to the optimal level. A PLTL leader cannot work through an entire problem set of more than 15 people while ensuring every single one of them is comfortable with the problem set. Having too many people in a group may not be very efficient for PLTL because too many questions may be asked and the smarter kids will get bored or the shy students will be too timid to ask questions in a big group and will not fully understand the topics. On the other hand, students have minimal learning from the group due to fewer variations of tackling problems if the group is only composed of a leader and two students. In addition, the lack of new voices in a session makes the session kind of dull. The PLTL network works best when there are six to 10 people in the group.

Along with the idea of a computer network, PLTL is all about group learning. PLTL leaders should do their best to facilitate that. Have fun!

**PLTL: Private Lessons Tame Lemurs**  
**Nigeen Hessami**

How do you find the line between friend and leader? How do you build group dynamic? Let me tell you, it's extremely hard. You will not get it perfectly, but the goal is to get close enough so you still have some authority but are not so authoritative that students don't participate; so your group members are friends but are not too friendly. You're right, it does sound completely contradictory, but PLTL has a method to its madness. At this point, don't get discouraged if your group dynamic doesn't seem to be functioning properly. If it is, don't automatically think it will remain this way the entire semester. Group dynamic is something you've got to work at a little every session.

So you say your group is perfectly nice to each other, but no one talks. After a question is read, no one seems to respond. Don't be afraid to take a little charge and call on people to write something on the board. After a couple of sessions of calling on students, they come to expect it and volunteer instead. Also, when you call on students to attempt answers, you get to see what they really know, which will help you help them.

Now let's go to the other side of the spectrum. What if you group members talk way too much about non-Chemistry related topics? You don't want to be the bad guy by yelling at them to get back topic, but at the same time some kind of foot needs to be put down. You can make corny chemistry comments or just yell out the word chemistry – anything to get them back on topic really. Eventually they will realize that their “tomfoolery” wastes valuable PLTL time and needs to stop.

But conversation non-chemistry related is good as well. A good way to start off a session is with a casual conversation about the past week. I have found it beneficial to start PLTL sessions by talking about something fun a student did or something funny you saw – anything to break the tension of arriving. I know this whole article has sounds completely contradictory at times and just downright confusing. But that's kind of what you will have to deal with. Every group is different, so the advice I give you might not work. You have got to learn to adapt to the group you were dealt.

The way a group works together really defines what each student gets out of PLTL. It is your job as the leader to make sure every person gets the most out of it as they can. That said; if

something isn't broken don't fix it. Your group won't always act the way you want them to or discuss the way they should be. Your main priority is that each student understands each problem. If that means never finishing the problem set then so be it. Don't try to force your group into a dynamic that it doesn't fit in. Each group of students and personalities mesh differently.

**Creating the Right Environment**  
**Nandan Prasad**

As you've probably learned by now, the challenge of being a PLTL leader is creating a group dynamic in which all individuals contribute to a comfortable but effective working environment. Creating this group dynamic requires a subtle expertise of knowing how to balance the formal and informal aspects of the student-leader relationship.

As my fellow leaders have no doubt already told you in this chapter ("Logging In") it is important to establish a good connection with the students from the first session. Before the start of every session, I try to engage the students on a personal level. For example, I often ask my students how their weekend has been so far. This helps create a more social atmosphere where the students are comfortable around the peer leader and with each other. I also inquire into how last week's quiz went, and if there were any lingering issues with the previous week's material. This helps broaden the focus of the group, in the sense that it shows that as a leader, you are concerned about the student's overall understanding of the material, not just with the student's ability to solve this week's problem set. This helps instill a mindset of cooperation amongst the group members.

Another way to help enhance the social aspect of the group dynamic is to be comfortable with taking small breaks from the problem set. Students usually tend to do this on their own, so it can be especially helpful in breaking the ice during the first few sessions in ways that you cannot do as a leader. These small breaks are even more informal than the discussions that occur before a session since they are much more spontaneous and natural. Thus, sometimes a distraction is an opportune moment for a leader to connect with his or her students. Enhancing the more social aspects of the group creates a more comfortable environment for the group to work, and also plays a key role in improving the communication between the group members and with the leader.

Now that you can get the students to talk to each other as normal human beings, how can we get them to really start talking about the material? In my group, I make a point to encourage and reward contributions or group interactions from specific members. For example, I make a point to say "good question" before dealing with a question a student asks. This helps raise the confidence of the individual group members and also helps encourage discussion of the material.

I also make sure to tell students that they have done a good job when they answer another student's question. Getting students to answer each other's questions can be difficult, but it is important. As will be mentioned later in this book, reverting questions directed to leader back to the group is an important way to encourage group discussion of the material, and this further helps build and enhance the group dynamic.

Creating a good group dynamic is no easy task in itself, and compounded with the myriad of problems and difficulties that can arise, the task becomes even more daunting. Hopefully, these few pieces of advice can get you thinking about how to get your network going and how to appropriately troubleshoot any problems along the way.

## **Stabilizing Different Personalities** **Shobhit Vishnoi**

After the first session and getting a brief introduction to your group members, you, as a PLTL leader, may notice that not all of your group members are the same. They may be different personality wise, learning style-wise, and skill-wise. Here's a list of the three main personality types you are likely to encounter in your group that may need a little work on so that they fully involve themselves in PLTL and group learning. Included is also a list of different ways to deal with the students:

**The Know-It-All:** This student is exactly as the name describes him/her. He (or she) is usually well-prepared in the subject as he has done all the problem sets and reviewed all of his notes prior to coming to PLTL. Not only has this boosted his/her confidence, but an A on his/her first exam and the fact that he/she has a knack for the subject that you are the PLTL leader for doesn't hurt either. The only thing bad about "The Know-It-All" is that he/she may dominate the group problems in PLTL and answer ALL of the questions that the PLTL leader may have for the group. Some good ways to deal with "The Know-It-All" is to make him/her be the Scribe during Scribe questions and to purposely call on another student when asking a question (even though the "Know-It-All" is frantically raising his/her hand and trying to divert your attention to him/her).

**The Quiet Kid:** This student is basically the opposite of "The Know-It-All." He (or she) usually doesn't talk and this can be for two different reasons: Reason 1: He/She is unprepared for PLTL because he/she has not kept up with the problem sets or even the lectures and therefore can't contribute to the group discussions or Reason 2: He's/She's just pretty shy and doesn't want to contribute to the discussions. Different ways to deal with "The Quiet Kid" is to randomly call on him/her to answer some of the questions or even to pair two quiet kids together during a "pairs" problem which basically forces them to break out of their shells and work together in order to solve the problem.

**The Attention Diverter:** This student is very different from the first two student categories. Instead of talking about a specific problem, she (or he) diverts the conversation to something completely unrelated to PLTL, whether it be about a poppin' party happening that night or what other things are happening (or happened) during that weekend. Of course,

discussing these things is perfectly alright, but “The Attention Diverter” constantly gets the group off-track. One way to deal with he/her is to ask he/her questions related to the PLTL problem sets or pair her up with “The Know-It-All.” If these things don’t work, you could even talk to he/her after class and let he/her know that he’s/she’s taking her talking a little overboard.

Of course, there are many other types of personalities which a PLTL leader will have to try to coalesce in order to obtain a functional group learning unit, but these are the main types of “trouble” personalities that you are likely to run into. Basically just do your best, have fun as a leader, and PLTL should go smoothly!



**Creating a Parallel Network: Making Sure Everyone is Hooked Up**  
**Amir Esmaeeli**

What is a PLTL leader's most important role? Is it to be an absolute source of knowledge on the subject they are leading? Absolutely not! In fact, a PLTL leader's most important role is to bring together a group of people with different interests, talents, and backgrounds and have them work with one another to achieve a common goal. This might seem like a daunting task—to take complete strangers each with their own unique personality and create a network of individuals, but it is much easier if you keep the following in mind and are flexible.

The most important thing necessary for creating a network is to make sure that everyone in your group participates. The only way for there to be participation from all group members is if everyone feels comfortable at PLTL. There are many things you can do to establish a positive environment.

For one thing, I would recommend having casual conversation with your group at the start of each session, while you are waiting for the rest of the group to arrive and settle down. This way you set the tone for a more casual and relaxed PLTL session, and by doing so will hopefully get everyone to feel comfortable. Also, come to every PLTL session with a positive attitude. If your group members see you in a cheerful mood and eager to learn, then chances are that some of your positive attitude will rub off on them, and your PLTL session will go by much smoother.

Once your group has settled down it's time to get started on the problem set. What you want to make sure is that everyone in your group respects one another. This may not be a problem at the start of the year when everyone is nice to one another, but this may appear as a problem later on when people start to show their true personality. Don't be afraid to talk with students after the session to let them know that they are being disrespectful to the rest of their group; not doing so would be irresponsible, and could lead to a breakdown of group dynamics. Another aspect of respect is equal participation. It is important that every student feel like they have a stake in PLTL. That is why it is important to balance out the participation between the more dominating and more timid students. It is important to make sure that the more dominating students give the rest of the group a chance to participate. One thing you can do to have this

happen is to have the more dominating students act as the scribe. However, this may not ensure that the most timid group members will participate, so it is important for you to also call on students to participate. This will be especially true in the earlier sessions when group members aren't as comfortable being around one another.

And last but not least, make sure to have a genuine interest in PLTL and your group member's well-being. Always be kind and respectful to your group members, and come excited to every PLTL session. When you see them around campus exchange greetings, and maybe even see how they're doing. And if you have the extra time, stay after sessions to help them with any problems they may have. They'll thank you for it, and you'll be that much closer to having a smooth year.

**Playing Dumb**  
**Leah Waldman**

It's forty five minutes into the PLTL session and your group is still working on the first problem on the problem set. The students have *finally* stumbled upon the correct answer and you are dying to say, "Yep, you got it! Okay let's move on," right? Wrong! As difficult as it is, you can't tell your students when they have the right answer. A big part of the PLTL philosophy is the idea that problem set answer keys simply do not exist. As a leader, it is your responsibility to make sure that the PLTL mentality is upheld during your sessions. Although they might seem foolish or pointless, there are important reasons behind why we do all the wacky things that we do in PLTL, like pretending you don't know the right answer to a problem when you obviously do (thanks to those great Friday afternoon PAM sessions). So why do we do this? What's the point? Shouldn't the students know when they get the right answer? Well, think about when you are taking an exam. You never really know if you got the right answer, but you have to be confident enough in your own problem solving abilities to be satisfied with your answer and move onto the next question. In PLTL, we teach the students to do this and help them to succeed in not only Calculus, Chemistry, or Physics, but in all of the classes that they are taking and will take in the future.

You may be wondering at this point that all this sounds nice, but how do I actually *do* that? First and foremost, try and refrain from ever telling the students the correct answer. From that point on, your group members will look to you as soon as they arrive at an answer for confirmation so they can move on. If you have already done this, don't panic. The next time that the students finish a problem and you feel eight pairs of eyes staring at you (or not, depending on how good your attendance is on that day) look right back at them and just shrug your shoulders. They may be slightly confused at first, but remind them that you won't be there standing over their shoulder when they are taking the exam, so why should you tell them the answer now?

Although it might seem helpful to tell your students as soon as they get the right answer, this really ends up hurting them in the long run. It is important to have faith in your group members that they will eventually settle on the correct answer and remember that the process of getting there is just as important as the final answer. So, even if you've just spent an hour on a

problem and the students are about to abandon the right answer and go in a completely different direction, hold yourself back and remember to play dumb!

## **Questions, Questions, Questions** **Isabelle Heye**

Many questions arise when you are trying to figure out what type of questions to ask. As a PLTL leader you must decide how general you want your question to be, if you want it to be open ended or specific, how much information you want to divulge, and whether or not you should be asking a question in the first place. Different questions will lead to different responses, and as a leader it is your job to pick what type of question to ask based on the desired response.

As a new PLTL leader I wanted my group to succeed, and get the right answer. I had to realize their true success lied in developing a better understanding the concepts in the problem set, and for that to happen, they had struggle. As difficult as it was for me, I learned that at times it was best to just keep my mouth shut and let my group struggle through a problem. So, even if your PLTL group is trying to use the wrong formula, just keep your mouth shut. Most likely they will get to a solution that is bogus, (e.g. a spaceship will get to the moon in three minutes if it moves at seven miles per hour-- a gross exaggeration) and then go back themselves to try to figure out what went wrong. It is when they do get a reasonable answer from the wrong formula that your question asking skills are put to the test. It is your job to form questions that will get them to see their mistake. However forming these questions without accidentally giving them the answer is not always as easy as it seems. Some general questions I would ask when I encountered this situation include inquiring about what conditions are required for the formula(s) they used to be applicable, and if these conditions are present in the given problem. Also, I would look through their work and see if they made any simplifications or assumptions that were not applicable (e. g. resistance due to air friction is negligible) and ask if those assumptions were appropriate.

Another time when question asking becomes critical in PLTL sessions is when your PLTL group is stuck and doesn't know how to do a problem. The first think I check is to see if the general ideas/formulas that are needed to solve the problem are up on the broad from the overview at the beginning of the session (if they are not that might be an appropriate time to add them). If they are, make sure the information they are given in the problem is represented with the same variables. This makes it easier to see what formulas they could use to address the problem. Also, students need to make sure that they have a clear understanding of what the

problem is asking and what the answer should look like (e.g. looking for work, what is doing the work and on what, what is the definition of work, what the units of work are...). Hopefully as the leader you will know how to do the problem and understand why they are getting stuck. Sometimes it is helpful to have the group articulate why or where in the problem they are stuck (it is much easier to find something when you know what you are looking for). As I mentioned above, it is good to let the group struggle, but when there is a complete stalemate as a leader it is the time to start asking appropriate questions. It is best to let the group members do most of the talking. So, as a general rule I would try to ask more open-ended questions. Also I frequently found the most powerful and useful question to ask to be the simple one liner-Why?

Remember that the students in your PLTL group are Wash U students. They are smart and will very quickly begin picking up on patterns you either consciously or subconsciously will develop over the course of the semester. Make sure to ask challenging questions even when they are right, and as mentioned above to keep quiet for a while when they are wrong. Make sure to mix it up, and ask different types of questions too. Not only will this keep the PLTL members on their feet, it will also prevent you as a leader from getting in a rut, and keep things interesting for you.

**Only Deflect  
Eliot Walker**

Are you beginning to doubt your skills as a PLTL leader? Are you worried that you are losing hold of your group, and letting the PLTL philosophy slip? If you are, be assured that there is at least one other PLTL leader out there that has been through the same trials of conscience.

During the middle of my first semester as a Calculus PLTL leader, going to PLTL started to feel like a chore. Even though my attendance was pretty solid, I felt that my students were bored out of their minds. How did I know? I had to poke and prod my students to talk, and when I didn't you could hear a pin drop because it was so quiet in the room. At first I blamed the problem sets, but I soon realized that the peer leader could make a huge impact on students problem solving. What was I doing wrong?

The problem, I found, was nestled in the very thing I thought kept the group going: my poking and prodding. After a while, I started to realize that my students relied on this constant external motivation, and I noticed that I really had not done much to inspire any sort of internal motivation. Hence, my students were treating me in the way that the PLTL philosophy explicitly forbids: as a teacher. I needed to fix the problem, and I had to do it quickly, or else my students would not be able to truly have a PLTL experience.

First, I knew I had to reverse my student's reliance on me pushing them through the problem. In the next PLTL session I decided I would go cold turkey on external motivation. I did the usual review at the beginning of the session, but after that I did my best to stay silent, and stay patient. I had the students read the questions as usual, and then I sat to the side of my students and let them work out the problem in the prescribed way. At first my students stayed silent, expecting an injection of my expertise, but they soon found that that would not happen. The next step of the rehabilitation was to get my students to stop directing all of their questions at me. I hesitated at first, the answer on the tip of my tongue, but then I did something that I knew I had to, I deflected. I redirected each question they asked me right back at the group as a whole. (Think of the old saying: I am rubber, you are glue, etc...)

To my surprise, this cold turkey approach caught on quickly, and my students snapped back into the habit of providing and asking each other for help. That particular session was exponentially better than the last one. There was talking, collaboration, students recommending

tips and corrections, and a general improvement in morale. I thought it would taper off after that, but the next session I applied the same approach, and the level of team participation rose even higher. Instantly, going to PLTL was a joy, not a chore: I was proud to lead such an insightful bunch of students.

There were many lessons that I learned from my first semester as a PLTL leader that I will apply in my future semesters. First, a PLTL leader should maintain a high level of commitment to the PLTL philosophy, and never let it waver. I had let my selfish desire for my students to finish quickly and to know about my expertise cloud the way that I led them. I fell into a pattern that caused them to rely on me. Luckily, as soon as I fell out of this pattern, so did my group. Second, “deflection” is an essential skill for a PLTL leader to have. Peer leaders must re-direct students’ comments and questions back to their group members.

In closing the “jury theorem” summarizes why PLTL is so beneficial for students. It states that a group is more likely to come to a “correct” decision more than any of the separate individuals by themselves. This is the core reasoning behind PLTL and group learning in general. As a leader and facilitator of this learning it is important to keep the discussion in the group.



**“Remember, please phrase your answer in the form of a question.”**  
**Will Ferrell playing Alex Trebeck**  
**Jeremiah Garrison**

As your relationship with your PLTL group materializes over the semester, it is important to troubleshoot your position in relation to your group before it becomes fixed. The group should come to see you almost as a sort of judge. You are there to bang your gavel and maintain order, but in the end it's the witnesses who tell the facts, while the jury decides the answer. Falling into a pattern of answering your group's questions is an easy position in which to find yourself. The feeling of knowing all the answers is gratifying, and in the short-term you are bound to feel you are helping them out. The best answers though, will force them to think through the question, get solutions from their peers, or get into the pattern of going to office hours for additional help.

First, thinking through the question is an important step in getting the students to view PLTL as a true problem-solving session rather than a help session or a sub-section. Learning to get their answers from their peers is similar in that they will learn to rely on one another, both in PLTL and later on, as the students go on to work with others in their classes and in their future profession. Second, pushing the students to go to office hours is another route to helping students with their questions. Office hours are an underrated opportunity, from which every student can benefit. Professors are able to answer questions and test students' knowledge to find gaps they didn't realize were there. Furthermore, many of these students are bound to want a letter of recommendation from a professor in the future. Gaining comfort talking with professors is a skill which will serve them well in the future.

The other questions you will encounter will be the questions for the students. There are many ways to use the question styles to your advantage, but it requires some thought. Most of the question types are decided for you, but you decide which ones you place emphasis on. If I end up with a small group some days, (don't tell anyone) I will sometimes adjust the problem solving strategies (e.g., round robin to random round robin) to fit the situation. I have found that special emphasis should be placed on the group and pair questions. Group problems will help break down barriers and get the students comfortable with one another. Pair questions are valuable in the beginning as well as when you begin to have personality conflicts between

students. Asking questions can be a little intimidating in groups of your peers whom you don't know, but in a one-on-one setting, I think people are pretty comfortable asking and answering almost anything. Pair can be particularly useful to bring people together who otherwise have not really hit it off, or to separate two people who have hit it off too much and won't focus. Another question type worth giving some significant thought to is Round Robin. From my conversations with other PLTL leaders, however, I also think Round Robin is the most difficult question type to perfect. Too often, it devolves into going around a circle to answer one question at a time (e.g., one student does part A and another student does part b). It should serve to break the question down further, to the point where simply writing the given information down is a step, and solving each equation is another. The value in breaking down a question shouldn't be ignored.

In the course of your PLTL leading experience, you will no doubt have your own experiences and form your own opinions. Inevitably, some of these opinions will clash with what I have found. Every group and every peer leader will have their own style. You will have to think on your feet, and don't be afraid to take a road less traveled if you think it will benefit your group.

**“Pointers to Help You Break the Habit...of Giving Answers”**  
**Becca Dirks**

You are a PLTL leader. There are many reasons that may have motivated you to take this course of action: for the students, for a review, or for a good résumé, just to name a few. No matter what the reason is, though, you're probably pretty smart. Chances are you are used to having the answers, whether in Calculus, Chemistry, or Physics, and you are used to giving those answers. Unfortunately, as a new PLTL leader, you will have to stop that. Yes, you know the answers, but it is not your position to give them. In order to effectively *lead*, not teach, your group, you will have to break this habit. For some people, this is a very difficult task. Below are some helpful techniques to aid you with this effort.

*Quit Cold Turkey*

Like any other habit, giving your students all the answers is easier to stop doing if you never started in the first place! Once you start giving answers, your students will expect them all the time. Ideally, the first session should be the place to avoid these expectations with your actions. If you are already a couple sessions into the semester, and have been a little too loose with the answers, there is still time to change. The sooner you start restraining yourself from simply telling your students the answers, the easier it will be. If you are worried about how your students will take the sudden change in your style, don't be. You can always take a break and go over the PLTL philosophy again, to remind them, and yourself, what PLTL is all about.

*(Support) Groups are Your Friend*

The main point of PLTL is to foster team learning. If someone asks a question deflect it and bring it back to the group. Ideally, if enough questions are deflected back to the group, your students will start looking to each other, not you, for the answers. When a question is first posed, an easy way out is to literally ask the group as a whole what they think: “That’s an interesting question, Jane. What do you guys think?” Start with broad questions. If you are met with silence (note: not an uncommon occurrence for PLTL leaders) help the students by asking questions that are more specific. Use your questions to direct their discussion in the right direction. If no one knows the answer, their class notes are a good resource. Instead of giving up, wait a few minutes for them to check through their notes.

*Moderation – Preparation Needed*

Occasionally, as a leader, you must be more involved. Sometimes, the group truly does stagnate, and a hint in the right direction would be helpful. Additionally, the group may, as a whole, get an entirely wrong answer. Even though you want them to be independent learners, you do not want them leaving with ideas that are wrong and could cost them points on an exam. To avoid this outcome, and to help when the group gets stuck, you need to have a reliable hold on the material being covered. This helps with the questions as well. Directing a group with questions is difficult if you do not understand the solution yourself. Prepare for your PLTL sessions and you will be ready to ask more helpful questions and better aid the group in general.

**PLTL Leaders Are Not Sources of Answers**  
**Heather Brown**

It is only natural for people to seek help from easily accessible resources when they are unsure about how to solve a problem. As a PLTL leader, you are the one with the answers who can help the members of the group. It is easy for you to give your PLTL group hints in order to lead them to the correct answer, but does that really help them learn the material? In fact, by always giving your group members the answers to the questions, you would prevent them from learning how to solve the problems on their own. The best way to help your group members learn how to solve the problems is to let them discuss the problems amongst themselves and figure out the solutions as a group. You should refrain from giving them answers, or even just hints, as much as you can. By solving the problems on their own, the students are forced to think through every step of the problem using the information they have learned in class. The group discussion plays a critical role in allowing the group to learn how to solve the problems. As the group discusses how to go about each problem, they must explain their ideas and listen to each others' ideas. Explaining their own ideas reinforces their knowledge, while listening to their peers' ideas expands their knowledge of the subject matter.

There are often multiple ways to solve the problems and it is beneficial to know more than one way to approach them. Often in your PLTL group, different members of the group will have different ideas about how to solve the problems. By encouraging group discussion, you allow the group to reveal a variety of ways to go about the problems. If you were to simply tell the group what to do and how to answer the problem, you would not only prevent group discussion from happening, but you will also prevent the group from learning multiple ways of approaching the problems.

As a PLTL leader, you are an authoritative figure for the members of your group. While you should expect your group members to respect you as a peer leader, you do not need to prove to the group that you know all of the answers. The students will see you as a smart leader no matter whether or not you tell them how to go about answering the problems. Your job is not to prove yourself as a good student, but to help your group members learn the subject in the best way possible. In order to do this, you must allow the group to solve the problems without your guidance at first, and only step in if they are stuck.

Outside of their PLTL sessions, the students will not be able to ask you, their PLTL leader, questions about how to solve the problems. They are on their own and must be able to figure out what to do without your help. After all, you are not going to be there when they take their exams.

It may feel uncomfortable to avoid answering your group's questions, but the best way to do it is to deflect their question to another person in the group or to the group as a whole. This way, you will not have to answer their questions and you will encourage the other members of the group to think about the questions and attempt to explain or answer them. By refraining from answering your group's questions, you will encourage group discussion and facilitate their learning process.

## **A Guide to Defeating the PLTL Nemesis: The Midterm Slump**

### **Darren Finkelstein**

We are all familiar with the lifecycle of a student's academic semester at Washington University. At the onset of the semester, students are excited about new classes and have lots of free time to devote to classes. The student starts off well, staying on top of assignments and going to class. As the middle of the semester hits, the student seems to have less time, doesn't study enough for the exams, insufficiently completes the assigned readings, and devotes less time overall to school work. The student can become burnt out, and often lose motivation and interest in the subject.

PLTL operates in a very similar manner. As a new leader, you are really excited to facilitate your first few sessions. After all, you decided to be a leader for a reason because in some way PLTL helped enhance your learning experience as a student or you enjoy helping students learn different styles of reasoning and problem solving skills. In the beginning of the semester, you are on top of everything: you show up on time, you bring food and snacks for the group, you efficiently lead discussion, you patiently listen to everyone and show interest in the group, etc... Indeed, the first sessions are the best part of being a new leader because it is such a new experience. The feeling of gained satisfaction is new and somewhat comforting knowing that you have improved another student's understanding and ability to learn.

Yet as the middle of the semester rolls along, you suddenly find yourself committed to many other activities. Your mind becomes clouded by other academic assignments—a looming midterm that you really need to study for, but you have to lead PLTL instead. In general, you are less committed mentally to PLTL because you simply become busy. It is no longer a new experience and the excitement has worn off by the middle of the semester. You spend less time preparing for the session, and you might care less because your mind is thinking about another activity that you should be doing. Ladies and gentlemen, this is the midterm slump at its finest.

So how are you supposed to successfully combat this pitfall? To start off, it is all psychological. You may think that you have a lot of work to do, and so you finish the session early on purpose. However, there will always be enough time for work. Indeed, by thinking about the rest of your individual work, you begin to stress yourself out even more. Instead, use the full time of two hours allotted for PLTL on the weekend as a time for distressing. You get to

interact with your peers in an academic setting. You are building your leadership skills, and learning different problem solving skills and methods of learning as well. PLTL is a time for you to forget about your own work and devote time for learning for the sake of learning.

At the same time, you have to consider the students' experiences as well. It is not fair for you to put in a subpar effort because the students will get a lot less out of each session. Not only will they be discouraged by PLTL, but the purpose of the PLTL philosophy will be sabotaged. The students will not get the PLTL experience if the leader is not enthusiastic, seems like he/she does not care, or is preoccupied by anything other than the problem set at hand. It is important to consider the reasoning for becoming a PLTL leader. In a sense, you are helping your peers. This worthy cause is enough motivation by itself to be an alert and committed leader.

Overall, a PLTL leader is not a task. It is a privilege. You must overcome all distractions and subject yourself to the PLTL philosophy for two hours every weekend. It is not a lot of time every week, and making excuses is a sign of the midterm slump. The best advice I can give to defeating the midterm slump is to put yourself in the position of the students. If you signed up for PLTL, what would you expect from your leader every session? The answer to this question is motivation enough for a becoming a consistent, enthusiastic, and engaged leader.



## **Updates and Promos for PLTL Motivation**

### **Sophia Masi**

Everyone knows that from time to time, your computer needs to be updated so that it continues to function. The same is true for you PLTL group (and yourself, the PLTL leader). There are many ways to find renewed motivation and to lead problem-solving; each of these strategies is as unique as the individual who uses it. However, a few strategies for motivating both students and leaders are particularly effective in the context of PLTL.

The first strategy to reinvigorate a PLTL group, especially once the most recent rounds of midterms are over, is to try new routines. Reinvent ways to approach problems and experiment with different styles. Instead of following the numerical listing of the problem set, start from the last problem. It never fails to surprise students, especially if you regroup the problems according to level of difficulty so that they feel accomplished once they solve the simplest problem on their own, resulting in a greater interest in the problems to follow. In case none of these changes seems to motivate your students, reorganize the seating arrangement. You and your group members will gain a different perspective on the session as a whole, and, hopefully, motivation to utilize the PLTL model to its full extent.

A second technique for regenerating motivation is to use the information you gained from your Seminar in Academic Mentoring (SAM). By learning to recognize different learning styles and the stages of group development, you can adjust your leadership style according to what fits your group best. This strategy works best on inspiring you to become a better leader as you develop a greater awareness of how important the social structure (year, school, and future major) and the environment (classroom vs. study room, loud freshmen dorm vs. main campus) are to your group. An expanded perspective opens new ideas and interests, both of which are key in creating motivation.

For the more sensitive leader, there always remains the all-purpose PLTL backup: food. No student can resist (for an extended period) the temptations of free food, especially those with high sugar contents. Sweets encourage students to relax. A relaxed student is one that can focus on learning the material with a strengthened zeal. This method has two main types: the first involves baked goods, as favored by the kitchen-savvy leader; the second involves candy, a

quick, hassle-free way to provide sugar for the busy PLTL leader (or the one who is not permitted within two meters of an oven).

The last method for motivating students within your PLTL group is to give them advice. These students are where most leaders were the year before: once they know how understanding the relationship between the particle-in-a-box model and a wave function from PLTL affected your grade in General Chemistry the year before, they will want to make full use of PLTL. By revealing your past experience with the class, your group members will be able to appreciate PLTL and are motivated to succeed as you did.

As a final send-off, never forget that you and your PLTL group members are all students. School work will be, at times, draining, but by applying these ideas, you should be able to succeed in giving both your group members and yourself the needed energy to march through the rest of the semester. Enjoy being a PLTL leader, one that always takes the time to refresh his or her motivation.

## **Stack Overflow**

### **John Scott**

Most of the current PLTL leaders probably have an exam in either Organic Chemistry, Physics, Biology, or some combination of such classes in the next two weeks or so. You might even be trying to read through this section as quickly as possible in order to return to your reading and problem sets for other classes. Welcome to the mid-semester slump. Every PLTL leader before you has had the opportunity to experience it and now you get to share in the tradition. The so-called “slump” comes from the simple fact that people tend to get busy while they are at college. Although it can be challenging, group leaders need to stay focused throughout the semester to ensure that group members respect each other and that they benefit from the sessions.

From the beginning of the semester, you knew it would eventually happen. The first few weeks of class were probably pretty easy to get through. Not much work, no exams looming in the horizon, and the reading assignments were easy enough. Now, however, things are getting more difficult. You might feel like there are too many things to do. Your exam schedule is getting harder, projects are building up, and PLTL might start becoming “just another thing” that you need to “get through.” After a few sessions, you’ve got it down anyway, right? “Winging it” probably sounds like a great idea (if not...it will). It is not. Students can tell when their PLTL leader is prepared for the session. If they start to notice that the leader is not prepared to guide the group, they will start wanting to take short cuts in the problem set and be less willing to make sure they understand the problems instead of just finding an answer as quickly as possible. It also undermines the students’ respect for you as a PLTL leader. Without the respect of the group, it is impossible to lead effectively and the group members start losing respect for each other. It becomes difficult to quiet a dominating member or make sure people explain their solutions to the members that do not understand. If they don’t feel the sessions are useful because their group leader does not come prepared, the group members just stop showing up. The group members have busy schedules as well, and if they view PLTL as a waste of time, they find other things to do.

There are simple ways to make sure that you are prepared even with a busy schedule in the middle of the semester. The first is to utilize the SAM and PAM sessions to become a better

leader. Although you and the other leaders might complete the problem set quickly, the session can be invaluable in predicting what kinds of problems students will have. It is also an opportunity to talk to other leaders about what works in their group and what does not. Using them well also makes the other preparation faster, leaving more time for valuable study time. After PAM, it is good to look over the problem set again before your session to make sure you remember what steps the group should be taking and plan your session. You can think about what question you will get, what parts will be hard for the group, and how you can make sure everyone participates. The extra preparation will make your group run more smoothly and it will be a better experience for the group members.

Even as the semester gets busier with class, exams, and other activities, it is important that you maintain focus. As a leader, one of the first priorities is to make sure the group members work with each other when they do the problem sets. This is much easier when the leader is prepared. Even when both the PLTL leader and the group members are busy with other things, spending enough time preparing before the sessions is critical to leading a successful PLTL group.

**Refresh: Make PLTL a Place Somewhere\_Over\_The\_Rainbow.mp3**  
**Avi Silber**

The choice between going to PLTL versus staying home and studying can often become like the choice between typing up a letter on a computer versus writing it by hand. If any number of steps on the way between opening a word document, typing up the paper, and printing it out is troublesome, you will probably choose to do it by hand if you are stressed out. If your group members are only coming to PLTL to get their questions answered and to get practice on the problems, then other things begin to trump PLTL.

Think about it. If you are right in the middle of midterms or are burdened with a heavy workload, you are going to begin making tough choices between different things you need to do. At such times, people need to: a) de-stress, and b) learn/study the material and strategies for doing so. So if all your PLTL session is geared towards finishing the problem set and getting out, then that frisbee game going on outside your window on the Swamp is going to look extra inviting to your group and can be distracting.

Personally what I do to deal with these situations is something like, “Man, did you see the pass it looked just like. Number 4 which is a small group problem...” or “Wow, yea that was a really good movie, it reminded me a lot of ...” and then just start reading the problem. It will get some laughs and smiles from your group and it will get them back on track.

You should not just be in PLTL with a serious face gunning through a problem set. You should be in PLTL as a family who is working together to really understand the material together. Instead of doing work, this should be like a family sitting around a table solving a puzzle. And remember, you are a part of the family too. It is important that you really enjoy hanging out and working with your group in PLTL because you too will occasionally find yourself overwhelmed with work. And that's why it's great not just for your group, but for you too, that your PLTL session is a de-stressing activity.

So the question stands, “how can I make this fun?”

At this point your first session has come and gone, and you have hopefully created good bonds between yourself, your group members, and each other. Your group members look up to you. The key for that is knowing the material. In PAM do not be afraid to hold your group back a little bit to make sure that you understand the material well enough to lead your PLTL group

down the right path. At these stressful times, your group members are going to really be hoping to be led to a clearer understanding, if you don't have that understanding, you won't be able to tell if they do or not. So this is where you are tested, and this is where you can earn their absolute respect and trust if you do not have it already.

So now they look to you. But maybe only when they need you.

In my case, I always just kind of acted goofy or silly and had fun with my group. We'd play a little bit of rock paper scissors. I would tell them about my life and ask them about theirs. And then I'd use one of my silly segways to move into the problem set. Bringing snacks also was helpful, but don't feel like you need to bring them all the time.

It's up to you how you want to go about making your family. And how you want to make it a place where they go because they want to learn how to learn but also to de-stress and see people they respect and enjoy seeing. But when you do, you'll know it. Because having to take off from your weekend for PLTL will not seem like a class, but it will seem like your favorite club.

**Tsst... The PLTL Whisperer.  
Anthony Pham.**

It's Sunday night. You have an exam on Tuesday, and TWO exams on Wednesday. You still haven't done the reports for the two labs due tomorrow. And the SAM response paper... just forget about it—it's going to be written sometime before class on Tuesday. The last thing you want to do during your valuable personal time is a PLTL session.

As the semester progresses and the exams and homework piles up, this feeling may creep up on an unsuspecting PLTL leader and the group members. Students start missing sessions and the leaders can barely manage to drag themselves across the swamp. Sessions will seem to drag on and on as the energy of the room is sucked into an invisible hole of despair. It's a trap, one that every peer leader should try to avoid.

So how do we prevent the general feeling of malaise from infecting the PLTL group? Intervention may require a little creativity, though those that aren't right brain inclined shouldn't feel like it's impossible for them to maintain the morale of the group. Important to preventing a downward spiral is identifying the key traits of deficiencies in enthusiasm, effort and energy. Is a student semi-comatose in a session? Not participating as much as they normally do? Seem anxious and trying to hurry through the problems? These are all varying symptoms of PLTL slump-itus. Leaders should realize that students display different ways of not approaching PLTL correctly (hopefully, you have learned about these signals from the essays you've read... you have been reading this book right?), yet as the semester progresses, they're more likely to show up to PLTL disorganized, inattentive and/or lethargic. The more you tolerate such behavior, the harder it becomes to return to PLTL normalcy. Don't let it happen!

Of course, to throw you into the morass on your own would be a travesty. Here's what the PLTL doctor proscribes: So that PLTL doesn't become the same repetitive session over and over, switch up the way you do things. If you usually review the material as you go along, maybe you should do a concept review before tackling the PLTL problem set. Perhaps you like to call on students individually during round robin, so the next session, you should let them battle among themselves for the honor (or task) of doing the next part of round robin. To prevent students from showing up unorganized, send them an email reminder before the weekend to review their notes and do the problem sets before the session. And if they are getting tired and restless while doing

the problem set, bring them food or candy treats to keep them energetic and reward them for paying attention—sugar is a great motivator. You may think that these solutions are simple and quite obvious, but in the thick of a PLTL session, a leader tends to forget these things.

Most importantly, though, the success of a PLTL group depends on its leader. As our friend, Cesar Milan says, you are the alpha dog, the pack leader. You are in charge! Don't let your group members control the pacing and mood of the session. The energy that you project when you walk into your session infects the rest of the students, whether it is positive or negative. Some leaders are naturally peppy all the time—meaning ALL the time—but for the rest of us normal people, it takes a little more to get pumped up every weekend. But just because it's hard doesn't mean that you shouldn't do it. Before you leave your dorm room, take five minutes to visualize how you want your session to proceed. This will allow you clear your mind and focus on giving your 100% to PLTL for the next 2 hours. And think about PLTL positively, not as another task you have to do, but as a way to relax with fellow students that are probably stressing out about their own upcoming test... I mean, a break from studying from the next (for example, organic chemistry) midterm should always be welcome.



## **Mid-Season Slump** **Vinay Rathi**

It happens to everybody. All those resolutions about waking up for class, working the problem sets on schedule, and caring about your classes in general all seem like distant memories. Suddenly you find yourself slogging through lectures, readings, and assignments with no end in sight (never mind the fact that you're going to review all of it later if you want to do decently on exams). It's a struggle to simply stay motivated.

Now imagine how the students in your PLTL group must feel. In addition to the regular horrors of school, they also have to spend two hours every weekend solving extra problems, which don't even really have a "right answer," and might not even help them with a test, that they already don't want to think about. While it's true that only they can make themselves care enough to get the most out of PLTL, it's your responsibility as a leader to engage and encourage them so that they will. This external motivation will go a long way towards holding effective PLTL workshops and beyond.

So how exactly do you go about doing this? The same way any great leader inspires others – fear. Throughout each session, be sure to mention how the material relates to the upcoming test or final as needed. For example, you may choose to preface an upcoming problem by saying something along the lines of, "I've actually seen something like this on a couple of practice tests from the past couple of years," or mention "You probably want to know how to do this for the test next week." This tactic will give the students an incentive to be attentive and involved in the group problem-solving process. After all, nobody likes being caught completely off guard in the middle of a test, especially when they know they could have prevented it by doing something they already should have (i.e. paying attention in PLTL).

However, be sure to get your students excited about PLTL in other ways or you might risk creating a negative or tense group atmosphere. It is important that you are energetic and enthusiastic about the workshops even if you are slumping yourself. The students will look to you for cues on group dynamics, so there's no way they will be stoked about the task at hand unless you are first. In addition, the promise of candy or baked goods is sure to put your students in a somewhat good mood before the beginning of each problem set. With these simple tactics in hand, you should be able to weather the mid-semester malaise until finals rear their ugly head.

## **Appendix: Adjusting and Adapting as a Group**

### **Lucy Liu**

Everyone would agree that the first PLTL session is crucial to establishing the tone and dynamics of the group for the rest of the semester. However, many of us probably overlook the importance of adapting and adjusting to the group's changes throughout the semester. To some extent, we can predict and plan for some of these natural changes such as a lowered attendance or reduced enthusiasm during the midterm season. Ultimately, it is up to the PLTL to reflect and determine what went well, what didn't, and where to go from there. From my experience as PLTL leader, here are some general principles to guide you as you continually improve as a PLTL leader.

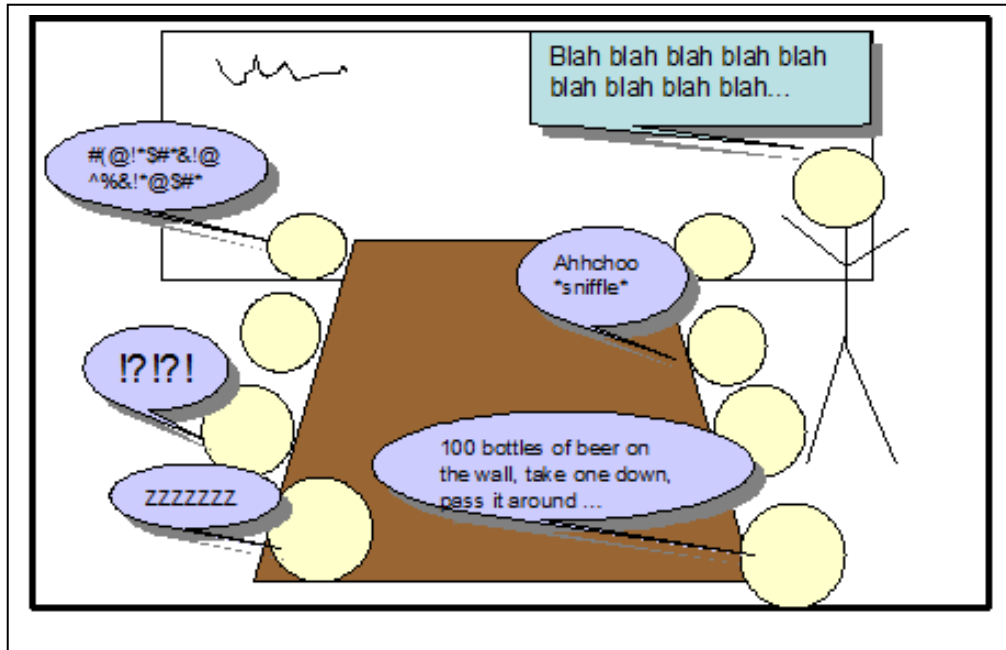
First, don't be afraid to try something new or change things up a bit. Even if your previous sessions have been for the most part successful, that doesn't mean that you can't try something new to make things better. If things haven't been going well, then that's all the more reason to try a new tactic. For example, instead of the routine review of concepts and equations at the beginning of the session, you could make it into some sort of speed jeopardy or some other little game to not only review the concepts of the week but also to get the group members energized and ready to do the problem set. This may be especially useful if you know that your group particularly enjoyed the icebreakers during the first session. Also, the change doesn't need to be drastic. It can be as little as changing from bringing chocolate as a snack to chips and salsa. When I was a PLTL group member, I always noticed when we did something different from the same old routine and that kept me interested in PLTL when it felt like things were getting boring. Furthermore, if the new idea doesn't go over too well with the group, there's no need to continue and it can just be a thing of the past. The key is to consciously note how your group members react to certain situations and make a decision from there.

Second, it's okay to ask your group members what they think. Not only will you show that you care about their input but you also won't have to wonder and guess about what they might think because you will already know from asking. Active communication will do wonders for your group because they can help you improve as a PLTL leader and they can bond with each other over agreements or discuss their disagreements. This may be a good way to end or begin a session. In addition to getting feedback from your group members, providing positive and

constructive feedback will also improve your group dynamics. Sometimes we think to ourselves that a group member explained something clearly or initiated discussion well, but we don't voice these thoughts. Voicing these compliments will improve that particular group member's confidence and also challenge other group members to seek additional compliments.

Finally, if you are still struggling with various issues such as a dominant personality or lack of people talking, then talk to other PLTL leaders or the SAM professors because more likely than not, someone else has experienced the same problem before. People have unique ways of solving problems and one of those solutions may work for you. Sometimes the solution is so simple that it just didn't occur to you because it would seem too easy. Insight from others can help you solve a problem that seemed unsolvable before. Throughout the semester, as long as you are actively trying to improve and not settling with a persistent problem, you are bound to find something that will work for your individual group.

## When Vista ... I mean PLTL ... Crashes Connie Tsai



Congratulations on having passed your classes with flying colors and on having earned a position as a PLTL leader. I bet you were once in PLTL yourself and that you remember how much you hated your leader. He made you talk to other people while you worked on a problem! She made you stand up in front of everyone and explain every single step! Now you are the one who has to push people beyond their comfort zones. By the time you read this, you should have already introduced yourself and noticed some of the personality quirks that make your PLTL group special. While these idiosyncrasies make PLTL fun, personalities will clash and things will simply go wrong. Don't worry though; you are surrounded by people with good advice.

Let us start with some issues of PLTL environment. As you have probably already heard, you should rearrange the tables and chairs that would be most convenient for your students to see the board and to interact with one another. I would suggest a square or circle. If your room has windows that face the swamp, be prepared for your students to be constantly distracted. You might remember that there are multiple activities on the swamp throughout the semester. Most of the time, there will be music blasting, people talking, and some form of food. If your students look restless, I would try playing simple games (i.e. rock, paper, scissors) in between problems or turning the entire session into a friendly rivalry between groups. When you encourage

competition among students, remind them that for a group to win, each member must understand the problem and be able to explain the group's answer. Surprise the students with some snacks and they might also forget about the food outside. If students disagree about the music, try bringing your own music or starting a cheesy sing along. You can usually maintain a good environment by removing outside distractions and temptations. Sometimes, however, your whole environment will be taken away as you are forced to evacuate the building (fire alarms anyone?). Challenge the students to really explain themselves since they won't have the board to write on. When all else fails, remember that it's only two hours long each week and that we should simply make the best of the situation.

Even in the best of situations, personalities can still clash. When someone tries to sleep during PLTL, bring their favorite snack or break out any food you have prepared. No one can eat and sleep at the same time. Food should also help encourage the people who come late to arrive earlier. I would bring a small pie or a few fresh baked cookies. Who wants to miss out on warm cookies? For the people that become sick, I would pack cough drops, tissues, and hand sanitizers. Since sick people tend to be grumpy, I would also give them some personal space. When people have bad days, try pairing them with the students that are inappropriately talkative. The talkative students should eventually say something that amuses the grumpy students and the ill humor of the grumpy students should discourage the talkative students from talking. I will admit, however, that this plan can backfire. If it looks like a fight is brewing, bring everyone back together as a large group and distract them until they forget the disagreement. If any student becomes a regular problem, you may have to make the difficult decision of talking to them privately about their actions and their participation in the group. I promise that if you respect their intelligence and that you follow the golden rule of treating others as you would like to be treated, you can adapt to any conflicts that arise during PLTL.

While this is the best advice I can personally offer you, it may not work for you. Each group is unique and each group will have unique problems. While one group may respond well to food, another group might prefer simple games. Just remember that not every session will run smoothly, but the good news is that you can handle anything as the PLTL leader. If you can handle Vista crashing, you can handle PLTL crashing (Mac users included as well).

## **Troubleshooting Dominating Students**

### **Peter Angell**

As a PLTL leader, you will encounter many students with many personality types. Some you will love – some quickly grasp the purpose and philosophy of PLTL, and push the group in all the right directions. These students make your life easier. Other personality types, however, generate students that have a knack for going against the grain, for disturbing the delicate dynamic that you work so hard to foster. One of these is the dominating personality type.

It will be clear on the first day. One of your students will answer every question. If you're lucky, they'll raise their hand and wait. If you're not so lucky, they'll blurt out answers before you even finish a question. If you have the blurting student (which is more common than you'd think), it's important to resolve the problem quickly and completely. Students use the first couple of sessions to test the water; it is your responsibility to show the dominating student right away that their behavior won't be tolerated, and to show the other students that they will have equal opportunities to participate. There are many ways to do this; the one that's right for you depends on a lot of things – one of them is whether your dominating student is usually right.

Many dominating students grasp the material, and feel the need to show that; it's often necessary to remind them of the PLTL philosophy. It's helpful to phrase guidelines so that it seems advantageous to the student to follow them; for example, explain that the purpose of scribe is for them to take a step back and think while the rest of the group solves the problem. Explain that just because the group is struggling does not make it acceptable for them to step in. The occasional subtle reminder will often be sufficient to keep them conscious of their role.

However, a potentially larger problem is a dominating student who doesn't actually understand the material very well, but still feels the need to be the one talking and leading the group. In my group, there were several weeks in the first half of the semester during which this type of student took off on the problem in a completely wrong direction, and the entire group blindly followed them. This creates a dilemma for the leader, because it is difficult to interfere without violating the PLTL philosophy; however, the group is often aggravated to learn they have done an entire problem wrong, and this can create a rift between the dominating student, the group, and even you. To avoid this, it's critical to do everything in your power to encourage the

entire group to participate and give input. It is often necessary to pick up on confused looks and interject an encouraging comment like, “Alex, you look concerned. What’s up?”

For any type of dominating student, there are also a couple fallback plans. First, asking the student to scribe is often extremely effective because it denies them the ability to talk. Second, one of the more drastic solutions is to talk to the student one-on-one. You can send him or her an email if it’s a minor problem. Alternatively, you can ask him (quietly and without drawing attention to the situation; via email works here as well) to arrive a few minutes early or stay a few minutes late. Simply pointing out to the student that there is a problem and you’d like them to try to stay aware of it can work wonders.

**When things begin to go awry...**  
**Haejun Ahn**

There is no doubt that leading a PLTL group is tough. There are so many different personalities and learning styles that you must incorporate into the group and it is not easy to get everyone to listen to you or to each other all the time. Unfortunately, not all leaders realize this before beginning their first session. There are always those new leaders who have a grand notion that PLTL is going to be a breeze. You just sit in a room with your peers for about two hours, and then you get paid! How wonderful is that? Sadly, it isn't as simple or as easy as it seems.

Difficult situations and conflicts in your PLTL group are inevitable. There may be students who refuse to work together or do not get along, and there may be loud students who constantly disturbs the group or quiet students who fade into the background. You can also have some very lazy students who simply sit there and refuse to do the problems, no matter how many times you ask them to work. This is not to say that good, solid PLTL groups do not exist at all. It is definitely possible to have a cooperative group, but every leader should prepare for the worst, just in case something goes wrong. Even the good groups are bound to have a few little problems now and then.

So, what do you do when problems arise? What do you do when things begin to go awry?

The first and easiest (in my opinion) thing that you can do is to remain levelheaded and somewhat detached. Don't spill out your emotions. Remember, you want your students to see you as a leader who can successfully direct the group, not as some student who gets distressed all the time and never knows how to handle situations. Also, try to keep a positive attitude. By this, I don't mean you should be as bubbly as you can be all the time, because that's just annoying. Just be encouraging and sympathetic if the students seem to be having a hard time. Be genuine and show the students that you actually want to be at PLTL, and sooner or later, even the most difficult students will warm up to you and appreciate your sincerity.

In addition, you should try to establish a cooperative atmosphere by encouraging small talk among the students. Often, students are unwilling to work with one another and end up just doing the problems on their own, because they don't know the other students very well and feel uncomfortable. You could tell them to work in pairs or in small groups and find that everyone is silent and has his eyes on his own paper only. Nobody chooses which PLTL group to be in, so it



is important to realize that not everyone in your group might know each other and be comfortable with the group. Establishing a harmonious group environment by encouraging the students to get to know one another will act as a firewall against any potential problems that may arise with group dynamics and can also act as an antivirus program to get rid of any existing problems.

Of course, you also have to make sure that things aren't getting out of control. You don't want the group to be too chatty all the time. If you find that this is what is happening, try to direct the focus of their conversation back to something chemistry/calculus/physics related. Gently (but not too gently, you don't want to seem like a pushover) remind them that they need to get through the problem set. It also never hurts to remind them of PLTL philosophy.

Good luck, and enjoy your new responsibilities! Leading PLTL is tough, but it is also very rewarding!

## **What to Do When No One Knows What to Do**

### **Sean Lourett**

Undoubtedly, there will be a time when your PLTL group gets stuck. They don't know how to proceed, and you're their only source of help. Maybe they tried really hard, maybe they have given up near the beginning. The most important thing is not to just tell them what they need to do to solve the problem. Although this seems innocent enough, the next time your group is getting stuck, they will be more inclined to give up sooner, because they know that you will tell them the answer. The idea behind PLTL is to get the group to work as if you are not there, while being there to help if necessary.

Very often, when your group is stuck, there are still people who have ideas that could help, but aren't willing to share them because they are not confident in them. If you recognize that there are people in your group who fit this description, try to encourage them to speak up and give them positive feedback on their ideas, even if they aren't correct. Getting everyone in your group to share all of their ideas will help keep your group from getting stuck on problems. Another similar strategy that I found effective is to have your group members look at either their notes or textbook for similar problems as examples, or answers to conceptual questions. If you think it is feasible that your group could come up with the answer without any input from you, then don't give any help and see how far they get. Instead, break up the awkward silence by posing questions such as, "Can anyone remember any similar problems done in lecture?" or what formulas does your textbook give relating to <topic name>?" You might want to write or have group members write the formulas and important information on the board. Every time the group completes a problem that they were stuck on without your help, it makes them more independent and resourceful when faced with similar situations in the future. Next time they get stuck, they might immediately say that they did a similar problem in class and avoid getting stuck in the first place.

Even so, there comes a time when all of their attempts have proven incorrect everyone is out of ideas. Here is where your review of the material and preparation comes in. I can't really stress enough how important it is to thoroughly understand the material as it relates to the problems before coming to PLTL. If you know how to solve the problem, but find that you are unable to help the group short of stating how you do the problem, then you probably should

spend more time studying the problems before PLTL. The two major tools that you can use to fill in the gaps for your group. First, you can either start with formulas, address their limitations, and ask whether the equation applies to the problem at hand until you have all of the equations necessary, or you can start with the quantities that you are given, and search for equations that relate them to what you need to know, while working within the limitations of the equations. (Note that either way, you must address the limitations of the equations used.) I mention this not only because it is very important in choosing the correct equations, but using equations in situations to which they do not apply is perhaps the most commonly made mistake. Second, it is also important to make sure that the entire group is being led by your questions. If only one person is following along, be sure to ask some “why” questions (or other open ended questions). Then you can ask the other group members if they agree with the explanation or if they have any concerns or confusion that the group can address. However, as soon as you think that someone has filled in the gap in understanding, stop leading the group and have the student try to explain to the other students. Sometimes it is easier for someone who just cleared a misunderstanding to explain the revelation to other students. Also, don't feel like you have to quickly jump to the next problem to make up for lost time. It is probably much more important to solidify the understanding in this problem after the problem has been finished, not just while solving the problem.

Sometimes I think it's difficult to just stand by and watch the students struggle through the problem when you could make it so much easier, but struggling through problems is the best way to learn. So even though you want to put the time you spent going over the PLTL problems to use, most of the time it's best to let the groups solve the problems without leading them through the problems.

## **How to Solve the Problem of Your Group Not Knowing How to Solve the Problem** **Kevin Stephenson**

There will most likely come a point in your experience as a Peer Leader when your group will not know how to solve a problem. This can be quite stressful for the leader – you know you cannot give answers, yet your group has no idea what to do and needs guidance. The solution to this problem is not surprising. In fact, probably the biggest thing you can do is simply to think about how you want to solve the problem before it occurs. So, there you go. Begin with that step and you're almost there.

If you want a few further suggestions, here they are. There are certain questions you can ask your group to lead them to the answer. Not surprisingly, these are called “leading questions,” and you will learn about them in SAM. It is up to the particular leader to decide how blatant they want, or need, to be in the situation. I would suggest beginning as broadly as possible on the questions, as sometimes there is a student right on the edge of the solution (or, at least, the next step), An example of this would be asking a general question about the concept involved in that question, probing on the particular aspect of the concept that applies to your question. Usually this will yield results, as the PAM questions are designed around those concepts.

Another option available to you is to reference past problems that relate to the current one. It is probably the case that these will not be the same, but it is not uncommon that a previous question will have a parallel strategy working through part of it. You can also ask them about the concepts of the past question, and as the students discuss these, they will sometimes arrive at a solution. This brings up another point: your students are smart. Really, the best thing you can do in this situation is to get them talking. If you can spark a conversation on the problem that is oriented in the right direction, the students will most likely arrive at the answer. This is the whole point of PLTL, and if they can get to this solution as a group, they have succeeded (and, by allowing them to do this, you have succeeded).

Again, the best thing you can do is to start thinking about how you will solve these problems when they arise and, chances are, some of them will. In this particular case, the best thing you can do is to orient your group and let them work it out. There will be times when you

need to help them more than others, and this is a skill that you will pick up with time. Start broad, step back and let the group operate.

## **Dealing with Excited Students** **Anca Timofte**

While some PLTL leaders have difficulties in dealing with students who are so excited about solving Calculus/Chemistry/Physics problems that they almost do not allow other students to participate in the discussion, a few leaders struggle with exactly the opposite problem: making the quiet students talk. In this situation, a courageous, efficient PLTL leader should try to identify the cause behind the quietness of the student. Is the student an introverted person? See A. Is the student not comfortable with this particular group? See B. Does the student feel intimidated by you? See C.

A.

1. **Call on the student directly.** This simple method is the one that works the best. Do not be aggressive, but call on the student from time to time during the PLTL session. This is the only way he/she will get used to express new ideas in the presence of others.
2. **Encourage the student.** If the student finally decides to volunteer to answer, be supportive. Show the student that you are interested in what she/he is saying by leaning towards him/her, maintaining eye contacting, etc. Even if the student's answer is not correct, do not simply dismiss it. Ask the student additional questions to help him/her find the right answer.
3. **Make use of other learning strategies.** Although PLTL is mostly based on group discussions, that doesn't mean you can't try something different. Ask the students a question and give them time to think about it and write independent answers down. Then, ask the students to share their ideas with the group. This will help the introverted student who will feel more confident about sharing an answer with others once he/she has it written down.

B.

1. **Create a friendly atmosphere.** Especially at the beginning of the semester, when the students don't know each other, it might be hard for them to volunteer to answer questions because they are afraid they might embarrass themselves by saying something incorrect. The ice-breaker from the beginning of the year might not have been enough to actually break the ice; allow students to talk about other things, unrelated to PLTL, so

that they get comfortable with each other. You will have to sacrifice problem-solving time, but it is worth it in the long run.

2. **Make sure the students are respectful towards each other.** Do not allow the students to interrupt each other or to make rude comments about/laugh at other students' answers. It is important that nobody is reluctant to ask even the silliest question or embarrassed because they don't understand a concept while others do.

C.

1. **Be fair.** Try to distribute your attention towards the students equally. Try not to be friendlier towards some students while ignoring others. Make sure everybody gets a chance to participate or is called on to answer questions equally. Do not praise other students more than others; do not discriminate on any basis.
2. **Respect the students.** As mentioned before, if a student gets a question wrong, try to help him/her get the right answer rather than telling him/her plainly that they are wrong. Be respectful and try to listen to everybody's answers although they might not be answers you were looking for. Never think that a question that a student asks is stupid; you are there to help them learn, not to criticize/judge them.

If after trying all the techniques above, the quiet student in your group still doesn't participate in group discussions, talk to him/her in private. Explain to the student that the more he/she participates the more he/she learns and that PLTL is all about working with others. Try to find a way to help the student as much as you can and do not give up until you succeed.