

Lab TA Transcript

Hello and welcome to our session on being an in person or remote lab TA. Before we begin, we just wanted you to reflect on this question, which is thinking about the best lab course you've ever taken and what made it successful. What made it memorable and how can this success be emulated.

Okay, awesome. Welcome to our little mini session. My name is Danika Nimlos. This is Sadie and we are both G2s in chemistry.

Maybe just a little bit about like what courses we taught, we actually both first taught Chem 1b and then in the last quarter we taught I taught Chem 3x, which is a combination of Chem three and three x remotely. So it was kind of an interesting experience because we had to figure it all out that quarter. Um, so I'll give you some tips on how to navigate that one but a lot of our advice is generalized for all lab courses. And I finally I taught come six remotely in the spring, which is a p chem lab. And similarly, they had to figure out how to do it remotely on the fly. But I taught undergraduate labs during my undergraduate degree so

I have a bit of in person experience as well. And then had to change that to a remote lab. Let's dive in throughout this session, we'll talk about a bit about the responsibilities and benefits of being a lab Ta, and then how to craft a good environment. To accomplish your own goals as a TA, and then just some pretty practical information about how to run a successful lab and maybe do so remotely. If that is your job in the coming quarter.

So to start, let's go over the responsibilities and benefits of a lab TA.

So the basic responsibilities can be broken down into these sort of five different categories. What you do in a specific course will obviously be dictated by how that course is taught and what the professor would like you to do in working with them. But in general, you're going to have to prepare bit about the experiments or the equipment and this generally means doing the labs ahead of time or setting up the physical space.

Even if you are teaching remotely you'll often have to prepare physical experimentation. Then you oversee the instruction and lab period and the students

Again, that might change a bit doing so remotely, but then grading I grade lab reports notebooks and pre lab exercises, hold office hours or answer questions students may have and you might lead a recitation section or some sort of general lecture style instruction for your students.

Now, what does this look like if you're doing that remotely. It actually looks remarkably similar. And from our experience the biggest difference is that you're not overseeing the lab period, generally in person. Yeah, I would say, yeah, one thing that's a little bit different about just

comparing our two labs was Sadie actually did her experiments live for her students. Yeah, yeah. So that's where the record or live streaming we sort of got both sides. Yeah.

So yeah, so. So the chemistry, the professor actually did all the experiments on himself and then recorded them. And the students were allowed to go on to a Google Drive and rewatch those experiments in on their own time. Um, so, obviously, you get a little bit different responsibilities. There was a lot of like editing videos and uploading them on the Google Drive on my side. Um, and it also kind of made it hard to get students to see like how they participated in the experiments. But if you are thoughtful with how you present your recitation sections, you can still kind of get those practical skills to transfer over. You just have to think about it a little bit more....

Yeah. Yeah. And I would agree. I think It was a remarkably similar job teaching a live in person versus remotely, but instead of having students in the lab with me. I was live streaming it to them. And so that preparation, just like really different and that we have to figure out How we were going to do that, you know, where, where we have multiple cameras and different people filming, or was I just going to walk around my phone on zoom, which sometimes works.

And so it's, it was the same rough idea of what it looks like. But just implemented really differently. And you have to use different techniques to sort of get the same learning across the students.

Similarly, then with office hours and recitation sessions were remote, which means using things like zoom or forums or any sort of virtual format to talk to your students. And I will say, then the grading does look different because you're not going to have physical I've notebooks, but it's still grading the same things. Totally. And also, I think, email is a lot more heavily used I will note. So yeah, prepared for a lot of you. We'll talk about communication a lot because it turns out to be critical.

With all the responsibilities come a lot of benefits to I know if you've TA'ed before you know what that is like and how it may benefit you as a person, but lab TA'ing in general has some pretty specific benefits in that it is it's hands on innately again difficulty remotely, but the nature of the work is much more built in active learning on helping students, figure out their own identity and space as a scientist. So it's, it feels very different to guide students through that it, for me, at least, was a huge chance to be a mentor and a teacher, as well as practice my own skills in the lab because you're gonna have to do everything as you prepare and it's great to brush up on any of that. Or maybe learn something new every day. You want to know the other. I mean, that pretty much covers it, and I think being there to answer questions makes you really have to be really prepared. Definitely.

You have to know your stuff right

So now let's move on to, then what you can do to sort of craft a lab environment when you walk into your lab or classroom to teach.

So first off, just reflect for a brief moment. You can pause the video if you have deeper thoughts on any of this. But if you've ever had a bad lab day whether it was you taking a lab or just being in the lab running experiments. What made it difficult, and what could have made it better.

So I came up with some ideas of what this might look like. These are ones that are definitely have all happened to me where nothing work to or had no idea what to do or broke something or my lab partner is driving me up the wall or I just didn't understand what was happening.

Yeah, really. Yeah. General everything happens. Yes. Um, yeah, we're having the same mistakes that everyone else is doing. And then like not still not getting it results. So having a collective struggles also really yeah

Yeah, and I think if you've been in a lab of you probably know that these things do happen, they will happen. Something's going smoothly but having the right environment can help students feel comfortable to express when they are frustrated and work past that instead of having that just define their bad lab day. And it helps make your job a lot easier because you know what's going on. And you know how to talk about it and how maybe make it better.

So some of the biggest barriers that can happen and a lab again whether you're in person or doing so remotely are that there are various communication with your students. And so you're just not really on the same page or not talking to each other. And the biggest form of this is that you can forget that, you know, a lot of vocabulary or really what you see as basic things or you know how to use equipment that your students have never seen before your students might be really mixed bag. They can come from all over and this term is called expert amnesia, where you are so specialized that you forget that you once didn't know either. And so it's important, in my experience, to assume that my students didn't know what was going to happen until they were taught it very recently, and obviously, some of them might, but just assuming that you're going to explain everything and move slowly can help people feel more at ease and more comfortable asking questions.

Definitely and I think that I overestimated. This when teaching my lab because it was the first slide that I taught and it was remote and it really came through their live reports, because they were not talking about the equipment in the correct way or like using different names. And so I think it's really important to be proactive on that type of thing. And kind of take yourself to like your, your most basic level, like all those years ago and really think like, okay, what did I like not know how to do and what are the little things little techniques that I can kind of try to teach over zoom

And this is a reminder, you're going to have all sorts of students in your lab. I was teaching a really specialized lab for upper level P chemistry, people who were really excited to study physical chemistry but Danica wasn't and had an entirely different representative group and a lot more students to and so you're just going to have people come in with very different experiences and no set of common knowledge. So you have to learn to talk to everybody about

that. Yes. And a lot of undergrads at Caltech are really trying to get into computer science. I'm not saying it's a bad thing, but I think that a lot of the students who took my lab class work like not picturing themselves doing anything experimental like ever. And so, especially freshmen, you know, this is your chance to like kind of inspire them to like, get some get some experimental experience and like maybe switch fields because not everyone can do computer science. But I mean, it's like you know that that lack of interest or like even that, like, oh, this will never be something I do is very common for especially first years because they might have never done it. So yeah, yeah. And you have such an opportunity.

Great. So then, some practical tips. This is by no means a complete list for these are some random things I thought of my add some but you know, the first day, make sure you define your role really clearly for lab students. They may not know what a TA is supposed to be or what they can use you for and make your expectations really clearable for what they should do and what you should do. And that'll help everybody know when is appropriate to ask questions of you and what you can answer in return.

And then some very general tips throughout the term calling your students by name is huge, particularly when it's in a lab setting. And you're probably have a smaller section and you're doing much more interpersonal work with them. It helps people feel seen and feel comfortable. And that ties into being accessible, making sure you talk to students.

And then the last thing here are generally just like guidelines that I found helped me keep in mind what the goal was, and stay happy when things got frustrating sometimes you're taking a time taking the time when a question is asked to answer it thoroughly and really thoughtfully helps both you and the student more than if you just fire something off and then you realize later that you might have misled them. And that just ties into your setting good expectations, and being professional and having fun.

And helping students find the fun even if they might be frustrated sometimes too. Yeah. And the thing I would add to that, on the first day in my experience, so we had like our first recitation section, which is the only live feedback, they would get for this class. I told them that they could turn their videos on if they wanted to. And no one had their videos on so it was basically me just talking to, like, literally black screens with like the names on it like for the whole quarter, which I would not recommend that doesn't mean you have to make them turn their video on but at some point, like putting a face to a name would have been really helpful to me.

Just to, like, you know, know that there were people there and like also if you want to use it as like a way to hold them accountable to like make sure they're paying attention, that's totally up to you. I think that probably lost some people to Facebook or Instagram so um but yeah I think I think that, especially in remote, you know, trying to reach out to students and like kind of meet them where they are and get to know them on a personal level is a challenge, but it's not something that's not attainable.

Yeah, I would agree with that. And I would say. Similarly, with the expectations there of knowing if something's going to help you be a better instructor like making it really clear. And one that I found really useful both teaching in person a lab is setting really clear expectations about when you'll be available for questions. Yeah. Because you have a life too. And you'll have your own responsibilities and especially now that so much is done online. It can feel really pressing to answer questions immediately and answer them at all hours of the night. And that's just another way that you just if you make your life much easier if you set up our expectations really clearly in the beginning so that there's a clear standard that you're just following throughout the rest of the term. And it's okay to say like, I'm not going to answer emails after this point and before this point because like they will ask you, somebody will be whatever times on there and they asked you. Yeah.

So finally let's move on to some of the more remote and in person tips for running a successful lab. And what that might look like.

So here's a wide overview of what running a successful lab might look like. Again, this might change given whatever specific course you're teaching and what your professor might want. But in general, sort of, what follows this flow where you prepare you do the pre lab. You teach in lab you have office hours you grade. And then I add adjust in here. This is something that I really like to incorporate into my courses and would highly recommend in that you can ask for feedback either anonymously, or just, you know, in person ask people what they're thinking. And it can really help readjust if you hit some sticky points on here and seven new tone for the next lab. And this can also help with students help them adjust after having a really rough lab report, figure out what went wrong and do better the next time. Nobody likes to just spiral.

So there are some specific examples in here. Feel free to pause the video and look through them. We won't go through all of them. But this is a general idea of how some of that work. Anything you'd like that. Um, I think, just in general, adjusting it for the first time remotely teaching the labs. It was a bit of a rough time and I think that it was really helpful to, like, just be okay, saying, Okay, I like don't know all the assignments. You have to do because like we haven't even figured out how you're going to do these assignments.

It's ok to like text other teachers or like start a group chat that that is something I would definitely recommend consult with everyone else that you're all on the same page, and then like send a follow up emails for your students.

And just to, like, make sure that everyone is on the same page. And that like you aren't getting one question a lot from different people and then answering that. And then someone else might have the same question whether or not this game.

So like, you know, if you need to blast their emails, that's fine. Like, just, you know, make sure they're all getting the same information that will help a lot. Yeah. Danika's point actually ties in

really well with some concrete tips is perfect for when things go wrong when that flow is not perfect, as it won't be.

On the next slide, you'll see some tips for everyone listening, in particular with communication because that's one of the biggest things but particularly when things go wrong, is the biggest time to really step up your communication game and make sure you're talking to students, you're talking to your fellow TAs you're talking to Professor and you're helping students. And so if you're talking to them in the lab, whether that be in person or if you're streaming like I did, or if you're answering the questions after and they're really stuck.

These are some general tips to sort of help students self correct. Remember that your role as a lab TA is a guide. You don't want to just solve everything for them, but you also want to step in before they get to a dark place. And make sure you're explaining and then also praising when things do happen well to keep people interested and happy in what you're doing. And then the outside of lab part is the part that particularly when you're teaching remotely is huge with the communication and that you have to be very detailed with your students. Because there is no such thing as a quick question anymore. You can't just pop by so really provide them all the information they need to self correct if they're gone awry and I'm sure you follow up. Make sure you keep students engaged throughout the course. And help make sure the things that went wrong don't happen again. Yeah, and I think I would say, going back to like setting expectations that first meeting or lab or whatever.

In Chem three x, we were really careful about like the first lab notebook and the first report, giving them really detailed feedback because that'll just help you later on. So, like, if you notice that they're not quite getting the format. Right. Or like their overexplaining under explaining, whatever. Make sure that you really hit that home or drive that point home in the beginning. And so, though the learn quickly and adjust and then you can grade their actual understanding of the content from that point on, definitely.

I think that yeah symbol is important, you're just gonna have to talk to students a lot. Yeah. Um, and here are some things we've already talked about a bit. The one thing I would add to this, and particularly in communication is similarly to providing really constructive feedback on those first assignments, you want to think about preparing a really detailed rubric ahead of time.

So it seems like the theme here is you know everything that you can imagine going around, you know, you want to try and think about it ahead of time and put in measures that will mitigate all the resulting stress for your students or for yourself. And so having a really clear rubric means that students might come to you with your questions, which just means that they do better. And so you have to give us feedback and it makes everything went smoothly and it helps them learn the best to. So yeah, there's, there's a couple of extra points on here for remote labs in particular. That middle one is tricky. I still want to try and maintain active learning for your students, whether that be breakout rooms on zoom or mail home kits, or your live streaming the lab. I don't know how your class will be structured to do that. But it should feel like discovery style and laboratory learning. Yeah, and I don't know how they're going to do it this

quarter. But, um, there were like some optional extra credit at home, chemistry, like experiments that the professor decided to like include in the course, which was really ambitious, no one did them maybe like one or two, but if you could like one of the things that I was trying to do was, you could make a paper spectrometer and that was like one of the extra credit things. And so I actually made it was like, look how cool this is. Um, and I think maybe it was a little bit, it fell because everyone was like, freaking out and stressed about remote learning anyway but i mean i think that that

Might be helpful to show them like, well, this is actually super easy and it's cool. And if you're just stuck at home. Anyway, like it's a fun thing to do, but they might change that next year. It's just, you know, trying to get them to do things that relate to the course and are like accessible at home is super hard. But if you could get them to do it. I think it'd be very beneficial yeah and you get to set the expectation and you can also just like tell them you know fun things that, you know, how to do like on your own time, you know, yeah, you know, your students.

Yeah. And that's I think the biggest thing for figuring out how to do remote lab successfully that I found was just having time I found it particularly when I was live streaming live. I was teaching a remote lab and there was a lot of downtime while you're running scans. And that was the biggest thing that actually made it feel like a normal, of course, was talking to the students in that downtime and just talking about chemistry talking about life, talking about what was happening with them in their assignments and their stress levels.

You get to know them and then you also yeah you get to share those little tidbits that make lab more fun right when you're learning something that might not be directly related to what you're doing or the little off the wall and just sticks with you. That was what I enjoyed the most about this time and my students seem to respond well to it to totally gets made it more fun.

Yeah. So finally we have some reflection for you and some scenarios that will show here. You can pause the video and think about them a bit more. They're geared to make you sort of think about some things that might arise in your lab and to troubleshoot before those things happen.

So in general, you can think about what problems. Expect to face and how you plan to manage it and then how you would manage that in a virtual or remote format. And here are the scenarios.

So if you have any questions for us. After this, or questions about how to best teach remotely or in person. There are some resources for you. You can check out. The teach.caltech.edu site for resources on teaching remotely or just any more. In general, the learn.caltech.edu for your students perspective as well. And then there are further resources in the form of the CLO your professors head TA, previous TAs, and co-TAs. And then if you have any general concerns you can contact an undergraduate dean's office for your students behalf or to just touch base. Thank you for watching. Yeah. Thanks so much. Good luck with your courses and I hope you enjoyed this all.