

My talk giving philosophy

Just like teaching, there is no one right way to give a talk and a lot of it is about your personal style and personality.

I am naturally very loud, bubbly, and excited so I use those things to my advantage. For example, I often don't need a microphone so I avoid technical difficulties, I don't need to remind myself to seem excited about the math I talk about, and I am able to come off as more personable.

I am also aware of my weaknesses: talking too fast, trailing off, etc... I combat these by coming up with strategies that will help me slow down, memorizing my talk, practicing a lot, and going over possible questions again and again.

The following are broad pieces of advice followed by more specific bullet points:

Tell a story

- Interesting and coherent stories usually have a plot
- I try to always have a conclusion, like a "ta-dah!" moment
- I like to think of mathematical objects as characters in the story
- I try to have motifs (recurring themes)
- I've read multiple business and sales books and they often say to make your customer the hero of the story. I try to keep this in mind where the audience is somehow my customer and I'm selling them whatever math I'm presenting. This helps me to reframe my talk as a story and to keep my audience front of mind.

Continuously put myself in the audiences shoes

- Who is my audience? Will there be people there not in my specific field? Am I talking to undergraduates?
- Pitch the talk to the most junior people in the audience, not to the experts or else you will lose almost everyone.
- From what I've heard (and in my experience), experts don't mind being reminded of stuff and they want to see you give a good talk for everyone.
- I think it's easy for people to zone out during talks, or they think something like "oh I don't understand this so I'll tune out or do my own work instead of listening" so really practice and think to yourself if things are confusing or not. This is also a reason to continually remind people of the information they need to know, for example, if I show a diagram we will need again and again I will usually bring it up again when we need it instead of assuming people will remember it.
- Sometimes things just *are* confusing, so I will often say that. For example, if I'm at the end of a complicated definition that I tried to simplify as much as I could I may say something like "Okay, that was a lot, but the moral of the story is ____ can be thought of as ____" or something like this to sum up how someone could think about the definition without all the technicalities.

- It's good to look at the talk and think "if someone zones out for a minute or two, have I presented this in a way that they could come back to the talk and know what's going on?"

Motivate (essentially) everything

- I always start with a minute or two of motivation for the overarching problem that the pieces of my talk are trying to solve. For example, if my talk is on X which is motivated by Y I will start the talk by motivating Y and then talking about how X is related to Y.
- When I'm reading over my talk, I constantly think "Have I explained why they should care about this?"
- If I'm going to talk about a proof I **always** say at least a few words about why I'm going to talk about the proof. I think people often dread proofs in talks as they can be convoluted and it's not always clear why we went over that proof. For example, I may say "this proof illuminates ____" or "let's talk about the proof in order to gain some intuition" or "we will use the argument in this proof multiple times in this talk so let's go over it"
- Sometimes it feels like I am listing a bunch of definitions and I know that this is leading somewhere and we need those definitions for the next parts, but I try to "tip my hand" and tell everyone else that too. For example, I'll say "okay for us to fully understand the next theorem, we are going to need some definitions. Starting with..."

There is no such thing as going too slow

- Math is hard
- It gives people time to think
- If I am worried I won't get to whatever theorem or statement that I need to get to, I will rework the story so that I present it in the beginning and somehow explain that we will work throughout the talk to understand that statement or theorem

Write for everyone

- I will go through my talk line by line and ask myself "who is this for?". I ask myself this as I often fall into a trap of accidentally writing things for no one, meaning, it's too complicated and esoteric for people who don't have a lot of background in the field but it's also somehow too basic for experts or people who have some knowledge of the field.
- I try to write as legibly as possible
 - For chalk talks I like to write fairly large so people in the back can see it, if there's time ahead of the talk, I will write on the board and then walk to the back of the room to see how it looks
 - When using color I try to use legible colors that actually look different from each other
 - If there is pre-written stuff in my talk I make sure it's written in my best handwriting. I will use the grid setting on OneNote to write and then will turn it back to blank for the talk
 - If it's not a slide talk, I try to make sure not too much of my stuff is pre-written, this is a personal thing to help me slow down

- Make sure there's not too much on each slide if you're giving a slide talk, a wall of text can be intimidating

Practice, practice, practice

- I aim to practice my talk at least 10-15 times both alone and in front of others
- I try to memorize all my talks as I feel it helps the talk go smoother
- Don't be afraid to scrap what you have and rewrite the whole thing, I find I learn a lot each time I write a talk.

Questions

- I will go line by line and think of any questions people might have, like "what does ___ mean?" or "what happens in the non-commutative case?". I jot these questions down and then go through and try to write up a long answer and then a short "moral" answer. I now have a document on overleaf of all these questions so that I don't have to rewrite them every time.
 - I have learned a lot from this process
 - This gives me another way to think deeply about my talk
 - Having the long write ups are good for day to day stuff and also if someone has follow up questions after your talk you have something to reference
- It's okay to take a second to think, I will say something like "Great question, I can't think of the answer right now, but we can talk after" and sometimes I will remember how to answer their problem during another question
- It's also okay to not know something, I will say something like "wow that's an interesting perspective, I don't often think about ___ (or I'll say I don't know the definition of ___) so I will have to think about that" and I will usually write myself a note or something to look into that later.
- If their question seems simple but it's actually a very complex answer I will say something like "that's a great point and the answer is actually quite complex" then I will either say the moral of the complex thing.
- I will often repeat people's questions back to them, for example, "Correct me if I'm wrong, but are you asking about if ___ could be ___" or something like this. Many many times I have misunderstood someone's question so repeating it back can really help save time and confusion.
- If someone asks a question during my talk that will be covered later, I will say that. This is more about my particular style and personality but I would say something like "Awesome! I'm about to talk about that in a minute, if you have further questions about it once we get there please let me know. First though, it's important that we talk about ____." and I continue my talk.