

Seminar 1: Speaking with impact

This session focuses on speaking skills, particularly in communicating scientific research. The aim is to provide tools to practise in future presentations and to help you find a presentation style that you are comfortable with.

1. The most important lessons

- There's no 'secret' to public speaking: here are some simple tools and practise will help you find a style that works for you

2. Tell us a story!

- In traditional cultures around the world, knowledge has been passed on through stories, fictional and factual, over an evolutionary timescale – so our brains are hard-wired to engage with them.
- Stories are still all around us, yet we often avoid them in science, because we want to be as objective as possible
- We can probably think of particularly compelling science stories, however: scientists who have gone to particularly impressive lengths or faced huge obstacles to make their discoveries. I used the example of Barry Marshall, who discovered the link between helicobacter pilori and gastric ulcers by infecting himself – but you can probably think of others.
- A good story involves characters who deal with problems or have something to overcome,
- Using the tools of storytelling can make your science more engaging and easy to remember: for your audience and for you
- You can make your whole presentation into one story, without compromising scientific accuracy. A good structure might be:
 - Starting with a problem and showing people why it is important
 - Describing how you are working to deal with this problem, in a way that is human and relatable
 - Ending with the impact that your work is having on the problem
- Before starting to write, you want to consider three questions:
 - What is the aim of your presentation?
 - Who are you, the speaker?
 - Who is your audience?

3. What is the aim of a scientific presentation?

- It might be: to tell people something they don't know
- To get people's input and advice
- To find collaborators or people who will take your work forward into research or applications
- To get funding
- Knowing the aim of the talk will help you tell your story.
- A talk is different from a paper
 - A paper requires all the scientific detail necessary to reproduce the work. It has a very rigid structure: Abstract, introduction, methods, results, discussion – but people can read it in any order.
 - In a talk, people listen in real time. They can't digest the same level of detail, so you don't need to include it. If they're interested by your work and want to know more, they can always ask you.
 - You therefore have a lot more freedom: to define the ideas you want to bring across; to decide on the structure; and to lead people through the story of your work. Make the most of it!

4. You: the speaker

- As a scientist, you find answers to questions that nobody could answer before.
 - On some specific topic you know more than anyone else in the room – or anywhere else. This is why people have come to listen to you.
 - Your authority is assumed: you don't need to prove it.
- But you also have authority in another sense. You are the author of your story:
 - you decide how to tell it. This can mean leaving out details that aren't relevant to the presentation. You are committed to scientific accuracy, not to completeness.
 - Of course you can't leave out information that alters the interpretation of your results! It is up to you to tell your story with scientific honesty.
 - You can sometimes come back to details missed out during the Q&A

5. Who is your audience?

- What do they know already? Are they specialists in your subject? Scientists with different expertise? Students? Funders? Non-scientists with a general interest? Ask your supervisors if you are not sure.
- Vary the level of detail depending on the level of expertise of the audience.
- Far more science presentations have too much detail than too little!
 - Details are crucial as a scientist, but you need to step back to give a presentation. Too much detail can be overwhelming.
 - People can ask for more detail, but only if they know why it matters

6. Framing the problem: How to start

- Your audience forms an opinion of you in 3 seconds: make them count!
- You don't need to start: "Hello, my name is ___ from ___ university and I am here to present my talk titled....". Someone will normally already have introduced you or people have a programme sheet.
- Start your story straight away, with something unexpected.
- What is the problem you are working on? Why does it matter to the real world? Who does it affect? Give people a reason to care about your work.
- One way to start: a short story or anecdote
 - Anecdotes can make a bigger issue more intuitive. They often resonate with people far more than statistics, and are what people remember – ideal to illustrate your problem or solution. People remember the characters: you can bring them up again later.
 - An anecdote can be about someone you know; the moment you realised something; or to show the magnitude of a problem. The best anecdotes are those where you have a personal connection.
 - They can contain a lot of important information
 - You CAN alter details or merge two stories – what matters is not the accuracy of the anecdote, but its message.
 - Anecdotes are powerful but can be used to misrepresent the truth. You are the expert: Does the anecdote represent the real issue?
- Or: start with a key moment when you realised something
 - Start where the story is most interesting: a pressing problem, or the moment you realised something important.
 - You don't have to tell things in chronological order: tell them in the way that makes most sense.
- Don't lose people at the end of your introduction. Once you have stated the problem, carry on to what needed to be done. At the end of your introduction people need to know what you are doing and why.

7. Leading your audience through the scientific content

- The curve of detail
 - Many presentations have a good introduction but then get technical too quickly – it's easy to lose people here.
 - The scientific approach you take should follow clearly from the introduction

- Over the course of the talk, mention again why what you are doing is relevant. This allows people to catch up
 - At the end, bring the level of detail back down
- Tell your experience, not just the result
 - Don't be afraid to communicate emotions. Showing how you felt at different stages of your work – what you're excited or worried about - will help you connect with your audience.
 - Your failures can be the most powerful part of your talk. Show your frustration, but turn it into something positive. What made you push on? Did you get any great advice? What did you learn?
 - People empathise more if you succeed after failing at first than if you succeed straight away

8. Your presence on the stage

- You are the expert and you have something to say that is worth listening to. But sometimes it doesn't feel like that on stage!
- Projecting confidence gives you confidence. Speak loudly and slowly, varying volume and speed.
- Use pauses deliberately, to separate thoughts and for emphasis.
- Keep as much eye contact as possible. Try focusing on one person for each idea, but don't worry about looking at everyone in turn.
- Project the emotions that you want the audience to feel: Be excited about what you want them to be excited about
- Stand and move with purpose
 - Keep both feet on the ground, slightly apart and don't lean on anything. If you have to click through your slides, stand next to your computer, not behind it
 - Try standing with your hands at your sides while talking, using gestures to reinforce, not to keep your hands busy.
 - You can move around the stage for emphasis or to show that you are moving on to a different topic

9. Ending well

- Refer back to the problem that you set up at the start. Did you solve it? Do you understand it better? Will others build on your work to solve it?
- Look into the future: think about how your results could be applied.
- Always end on a positive note.

10. Responding to questions

- Questions can seem scary, but a room full of scientists engaging with your talk gives you an opportunity to learn and gain useful advice.
- Leave a few minutes at the end for Q&A, and try not to cut this short
- If you get a question in the middle of your talk, acknowledge it, finish your current thought, then answer it, if you can do so quickly, or say you'll answer at the end.
- Asking a question takes courage. Be grateful for the contribution and try to thank each person differently, to avoid sounding repetitive or insincere.
- Sometimes you will get a hostile question. Take the question seriously, but ignore the tone. Treat it like a helpful suggestion – try not to get defensive!
- If the question is difficult, take a moment to think or ask for clarification.
- Keep your answers to the point: don't try to draw in lots of things you couldn't fit into the main talk
- If you know that what was asked is an open scientific question, you can show some excitement about more research to be done
- If you really don't know the answer, say so
- Zoom-in and zoom-out questions
 - Zoom-in questions are about what you said, asking for clarification or more detail. Answer these briefly. If there's been a misunderstanding, you can learn what you need to clarify next time

- Zoom-out questions are about what you didn't say, asking you whether you had considered another angle or if your work can be extended. These are the questions you want to invest in
- Have you done the experiment they were asking about, but did not have time to talk about it? Now is your chance to bring it up.
- Had you thought about what was suggested but did not do it? Explain why, but keep your answer brief.
- Did the question bring up something you had not considered? Be excited! If it helps you to improve your research then everybody wins. Don't feel bad– this is the purpose of scientific discussion.
- Some questions start great discussions, but the Q&A may not be the best time. Offer to discuss further later rather than taking up the whole session.

11. Practise

- A talk is a performance: invest time in practising delivery as well as writing content. Aim for three complete run-throughs
- Practise alone, then with a friend or colleague, or even in a mirror. Find a space to give your talk fluently, loudly and confidently. If possible, give the talk in an empty seminar room with all the technology you'll be using.
- Go back and change things if necessary, then practise again
- Try even filming yourself, if you can. You may well notice subconscious mannerisms like swaying or fiddling with your hands.
- Try just introducing one or two new tools with each new talk
- Find good people to learn from
 - The internet is full of advice on how to give great talks, though applying this to communicate science takes creativity
 - TED-Talks online can give you a lot of ideas
- Example TED-Talks:
- A wonderful talk by Benjamin Zander (<https://www.youtube.com/watch?v=r9LCwI5iErE>) notice who he actually doesn't move purposefully and seems a bit on edge, but because he has a style he is comfortable with, he can speak freely and all his enthusiasm comes across
- For a much more polished style of speaking, you can look at Simon Sinek's talk (e.g. <https://www.youtube.com/watch?v=4VdO7LuoBzM>) what suits you better?
- Not all TED-talks are good: reading from his notes all the time, insecure standing behind the podium, somewhat self-aggrandizing and retelling history rather than a story, without making the big issue clear: Michael Gosney: <https://www.youtube.com/watch?v=sfPggRXo3gs>
- An example of getting the start right by not starting at the beginning - compare Abby Sutherland's talk at Conejo (<https://www.youtube.com/watch?v=0amtzgsSbxo>) with the one she gave at Waterloo (<https://www.youtube.com/watch?v=GMSNAbL1l6I>) Were you waiting for the rogue wave?