

S2E7: How to share your science without ‘dumbing it down’

Hello hello hello and welcome back to another episode of the scicomm toolkit podcast in a little while but I hope you are all doing ok. ka8 relationship with science communication I have some new equipment and been filming some bits which you can see in a Blog now on my YouTube channel and I hope to stop creating some more video stuff but I've also been seriously battling a constant thought in my head about whether science communication has actually been the right career choice for me. there are many many many different factors that are going into this and I am the type of person that will always question the decisions I've made but I just wanted to to be honest, tell it how it is and yeah don't just paint this picture that things are always brilliant.

my life has been consumed by video over the last few weeks which has been great but I'm ready to get back to audio which leads me nicely on to today's episode of the scicomm tool kit. for anyone that doesn't know before I was a podcaster and even before I was doing science communication on social media I was a blogger. and so for any of you who have been Reading or following my blog for a while now, this topic will probably be a little familiar. I have spoken about it before in a blog post so I wanted to repurpose that blog post into a Podcast episode and also give it a little bit of an update with some other tips and thoughts and so on. And that topic is talking about sharing your science or your research without quote unquote dumbing it down. I really need to find a better way of saying ‘dumbing it down’ maybe oversimplifying will work.

Doing science communication is a skill that can be learnt, but like any skill takes practice and time to perfect. Sharing your research in whatever way you choose is a fine balancing act between sharing the novelty or the finer details and making sure everyone is on the same page before you delve into that.

Yes, doing science communication does often mean simplifying the content to make it understandable, or streamlining it to remove the excess baggage of jargon or too much detail. It needs to be done to be able to translate your message. In the world of research, this often leads to complaints from scientists that this process can ultimately make things inaccurate, or dilutes its impact after years of hard work or misses the point completely of what is new.

Now of course we don't want our scicomm to be inaccurate, and we want to communicate why this new research is exciting, but adding all of that can just make it really off putting to an audience. So how do we do this?

This is something I get asked a lot and I want to share some helpful advice for any scientist starting out or trying to improve their scicomm about how to translate your research for your audience.

First point - Accuracy over precision (or facts over details if you will)

I will start with this one as it leads on from what I've just mentioned. It is important to keep our science communication accurate, but things don't always have to be precise. It is

possible to say something that is true without bogging your audience down in all the details that you might usually share in your academic seminars or conference talks.

A useful thing to sort of audit yourself when preparing. Ask yourself - does the fact still stand without that extra detail? Does that add to the story you are telling? If you need it to be accurate then share, but if it is just adding another layer of complexity maybe leave it out. A good example of this is newspapers.

Newspapers adopt the inverted pyramid approach to story-telling. The headline gives the story, the first paragraph adds basic facts, as you read further down the piece you will get more elaboration and detail. In good journalism you will never find a point in the story that contradicts what went before.

How far down the pyramid you travel in your science communication depends on the audience you are engaging with.

Building upon that for my second point - don't get bogged down in those details

A lot of jargon gets thrown around in the world of science. Jargon that can be understood by anyone if you describe it in the right way. But does your audience really need to know all the details? The short answer. No. They don't want to know about the technical edits you made to that mouse DNA, or the deepest darkest depths of the algorithm you are using for your modelling. Not everyone wants the same level of detail. A technical talk will want those things, but a lay audience talk don't want to know about it. Think about what your audience will want to know and share that... without the jargon.

Number 3 - is analogies

The use of analogies is common in science communication. They are a useful tool, because they allow you to link something new and unfamiliar to an everyday experience.

For example we can think of an atom as a miniature solar system. The electrons around the nucleus are like planets orbiting the sun.

Care needs to be taken so that audiences understand that these are a model for the thing being explored and not exactly the same. Also note that, pointing out the differences can sometimes be as useful as comparing the similarities.

An analogy is going to conjure up an image in anyone's mind, and it is going to make what could be quick a complex subject more approachable and less daunting. Using things in that analogy that again are familiar to people is just going to cement that take home message in their minds even more. That and it will make it more memorable that someone could share it with their friends and family again.

How to create your analogies will be the topic of another podcast episode in the future, but just know that they can take a little while to come up with.

Again building on that for my fourth tip - Make it into a story everyone can relate to

As humans we have been 'programmed' over the course of evolution to respond to stories. When we hear a story we resonate with, it causes an increase in the levels of the 'feel good' hormone oxytocin in our bodies, which in turn allows us to build connections of trust and empathy. So, rather than talking people through each technical step of your protocol, embrace the art of storytelling and share the journey that your proteins are going on.

Again more on storytelling in the future, but if you want to get a head start there is a fab book called the Science of Storytelling by Will Storr that is a great place to start

For number 5, think about what is going to help you tell your stories and bring your analogies to life. Make use of demos, images, props and so on. Visuals, in my opinion, are so much more powerful than just words. Being able to see how DNA is compacting down to fit into our cells with a demonstration, or just using a simple flow diagram to explain possible outcomes is going to mean that you are not going to lose your audience.

Most of these tips come down to being prepared - so my next tip is exactly that - you need to know your audience and you need to know your goal for your scicomm because that will determine the level of detail and complexity to share.

There is also no such thing as a general audience, so you need to know your audience! Once you know your audience, you can work out what parts of your research are going to be most relevant to them and highlight that.

To make sure that your audience can follow your idea you need to find out what you want to achieve with your communication first. What is the bigger picture of the scientific topic? Why should they care to find out more about it? Make sure to include the reasons in your communication.

Think about the tone of voice and language that you are using

This is a tricky one to master and requires a lot of trial and error, from my experience anyway. But can also be a way that 'alienates' your audience without you even realising it and you lose their concentration, or maybe even the way they perceive scientists. Always think about the way you are speaking to people. Could it be putting them off? Have you got the right attitude to be communicating? Try not to say phrases that might be patronising. Things like 'you won't know this, but..' or 'as you know already'. Don't assume a knowledge level and don't show off by stating how complex something is. You'll be surprised by how often that happens.

This does not imply that you need to leave out field specific terms completely though. Sometimes it is not possible to work around them without losing accuracy. In that case, it is better to incorporate the terms and explain them thoroughly. Just make sure it does not happen too often.

Tip number 8 is to Ask open ended questions

Science communication is part of a conversation with your audience. You want them to ask you questions as well as you giving them information, and perhaps even asking them questions. It is also a great way to gauge what your audience already know. By asking your audience 'what they know about stem cells' compared to 'do they know that stem cells create identical copies of themselves' is allowing your audience to contribute to the discussion and let's you know where you can build knowledge from.

These tips work across any type of science communication, but some specific tips for written forms of scicomm are: Give long sentences a haircut. Lengthy sentences can be hard for readers to follow. Shorter ones help keep them on track and ensure your message is clear.

Swap passive voice for active voice. Writing in the active voice makes your sentences more direct, and surprise – more active. It also stops readers getting muddled, because it's clear who the subject of the sentence is and what they're doing. One of my most successful Instagram reels was about active voice, so take a look at that, or I will add it into the show notes too.

But my final tip and probably the most important one is to never underestimate your audience

While it is true that 'lay people' do not have the same expertise in the scientific topic you want to communicate, it does not mean that they are not able to think logically. Do not forget that the 'lay people' make up the majority of society and most of them are experts in their own jobs themselves. They are just not trained in the scientific method and unfamiliar with your field. Furthermore, you need to forget that anything about the public is 'general', as everyone presents with their unique background, interests, and knowledge. They might not know field specific terms, but they are well capable of processing what you are going to tell them if you present it in a logical way that suits them – just like you can understand what your doctor is telling you if they explain it in an appropriate way.

So that was a lot of bitesize tips about how to share your science without dumbing it down or oversimplifying. So let's do a quick recap.

1. Make sure your scicomm is accurate, even if it is not precise.
2. Don't get bogged down in details
3. Find a good analogy
4. Tell a story, and use story elements like characters, emotions and perspectives
5. Bring your story to life with visuals - images, props or demos
6. Be prepared - know your audience and your goals

7. Think about your tone and language
8. Ask open ended questions and start a conversation, not a lecture
9. Is a written tip to cut longer sentences and use the active voice
10. Finally, number 10 is to never underestimate your audience

It is possible to make complex ideas accessible without oversimplifying, but it needs thought. Remember the top tips. Think about what you want say, and who you are saying it to, and don't try to do too much."

Welcome to the DIY section of the podcast. The section where I give you an exercise or resource so that you can take away what we have talked about today and put it into practice straight away.

Today's exercise is one I saw shared on TikTok by the wonderful Dr Susanna Harris and it is called oversimplify your science. I will add the link in the show notes so you can go follow here and share your results on TikTok too. But this exercise is going to help you realise where the line is between making it accessible and oversimplifying your science so much that it can be inaccurate.

So step one - write a single sentence that summarises your science. Now replace all the jargon words that you wouldn't expect a high school graduate to know.

Step two - take your new sentence and make it even simpler. Cut out any other jargon, use shorter words, make the whole sentence shorter.

Repeat this again and again and again until you have something that isn't technically accurate. By the end of this you will have a range of ways to explain your science, one or two of which might be slightly wrong. It will also help you identify what scientific jargon you need to say in your science communication but crucially need to explain and potentially introduce to your audience so they can follow along with your story.

Hopefully this episode has given you some food for thought and great places to start. I would also love to hear about your oversimplify your science challenge, and thanks again to Susanna for sharing that great exercise. That is that for this episode. As always you can find transcripts and show notes on my website that is www.sophtalksscience.com/scicommtoolkit. If you enjoyed this episode and found it useful then make sure to subscribe so that you don't miss out on any scicomm tips that are shared. Or maybe tell your friends about it, share it on social media.

Thank you all again for listening and I look forward to sharing more scicomm advice with you in the next episode. Until then, keep bringing science stories to life. Bye