

How to present complex ideas clearly

By Dr Emily Grossman - 04 May 2015

Skills: Methodology: Speaking in public. Talking about my field of study. (**Common European Framework of Reference for Languages: Spoken Production B2** 'I can develop a clear coherent argument, linking ideas logically and expanding and supporting my points with appropriate examples'. "I can give a clear, systematically developed presentation on a topic in my area of work, study or special interest, highlighting significant points and relevant supporting detail.')



Get the audience to really 'see' what you're trying to explain. Photo © Oliver Thompson, licensed under [CC-BY-2.0](#) and adapted from the [original](#).

Explaining complicated ideas is not always easy. Dr Emily Grossman, an expert in molecular biology, broadcaster and educator, who trains contestants for the [FameLab](#) International science communication competition, gives some tips on how to do it.

What's more important: what you say, or how you say it?

When trying to explain complex information to an audience, the first task is to get the content of what you're saying right. You can't hide poor or boring content behind a charismatic delivery technique, and expect your audience to let you get away with it. But how we communicate is also crucial. When someone is speaking, most of the information we receive comes through their body language, enthusiasm and tone of voice. It's our overall experience of the speaker that counts.

Why does this happen? Our brains contain 'mirror neurons' which automatically make us copy the emotions of the person we are engaging with. Have you ever noticed that if you see someone in the street smiling, you will start to smile too? If a speaker appears happy and relaxed, the audience will feel that way too, and will be more likely to absorb the information the speaker is trying to get across.

The more complex the information, the more important this is. Imagine trying to explain your latest scientific discovery in a flat, monotone voice. If you don't sound excited, the listener won't feel excited either. They will find it harder to engage with the information, and therefore, crucially, it will be more of a challenge for them to understand it.

How much technical detail should you include?

This is a tricky one. Generally, as little as possible! Try not to use technical language. If you do, make sure it is absolutely necessary in order to help the audience understand or appreciate your point – and ensure that you explain the word or term immediately afterwards.

Remember that there is a difference between using language that is simple (easy to understand), and simplistic (treating the problem as if it is not actually very complex at all). Keep your words as simple and clear as possible, and use real-life examples and illustrations where possible. But don't patronise your audience by pretending that something is not as complicated as it really is.

How should you use body language when presenting an idea?

Good body language is crucial to keeping an audience engaged and interested. If you look alert but relaxed, your audience will mirror this and feel the same way. Stand up straight, but relax any tension or stiffness in your body. It's a good idea to gesture with your hands in such a way that helps to make clear what you are explaining – but only do this if it feels natural, and try not to wave your arms around unnecessarily!

Be yourself

The best presenters do not try to emulate anyone else; they are simply a bigger version of themselves. It is important to celebrate your own uniqueness and use your own way of communicating. Think about how you would tell your friends an exciting thing that happened to you today, and what gestures you would naturally use.

Watch out for distracting movements

Pacing or moving around as you talk can sometimes add to the excitement of the story, but it can also be distracting. Always try and work out if the way in which you are moving is in keeping with the emotion or content you are trying to get across.

It is a good idea to video yourself to see if there are any things you are doing that are distracting or give away your nerves. Fidgeting, fiddling, shifting your weight, swaying or playing with a pen are classic examples of this.

Make eye contact with your audience

One of the most important areas of body language is eye contact. This can really help an audience feel immersed in the story, but can also help you, as a presenter, to feel less nervous. A few seconds of eye contact with individual audience members will actually help to calm your nerves. This will feel a lot longer than is initially comfortable, but try to allow it to feel like you're engaging with just that person for a good few seconds before moving on, and try to make sure you include everyone in the room.

Metaphors and imagery can help convey a complex idea

They say that a picture paints a thousand words, and that's equally true for the images we create through words. If you can get an audience to really 'see' what you're trying to explain, they will not only be able to understand it better, but they will also remember it.

Analogies and metaphors work really well, especially if there are no real-life examples to draw on. You do have to make sure that your chosen comparison really works, but a good metaphor for a complex topic will stay in people's minds forever.

For example, I use a horse-racing analogy to explain electricity to my students. The horses are the electrons, and the race track is the electrical circuit.

Break your presentation down into manageable parts

First, imagine your presentation as a rickety rope bridge that is being used to cross a deep ravine. Any weak points, and the whole thing could unravel at any moment, sending you hurtling towards the river below. Not ideal. Most of us have felt like this at some point when giving a talk, especially if we're presenting something new.

However, you could instead think of your talk as a series of stepping stones, and imagine yourself hopping easily from one stone to another. If one stone becomes wobbly or is washed away, you can simply jump forwards, sideways, or even backwards. Your journey to the other side will remain intact.

If you can think of your talk as a series of self-contained mini-talks, then if one part goes wrong, gets forgotten, or simply doesn't feel like it's working on the day, just jump to the next part – you can always go back to it later.

Make adrenaline work in your favour

Nerves are a perfectly normal phenomenon, and are a very useful way of making sure that you are fully energised, revved up, and ready to deliver your talk. So embrace the adrenaline rush and try to think of it as excitement rather than fear. It's all right to have butterflies in your tummy – the trick is to get them all flying in the same direction!

Exercise, music and meditation can help

I find it helpful to do some physical exercise a little while before I'm going to give a talk. I go for a quick run or even just jump about to some music. (...)

Above all, try to remember to have fun! Think to yourself: 'This is my moment, where I get to talk about something that I'm truly passionate about, so I'm going to enjoy it.'

Follow Emily on Twitter at [@DrEmilyGrossman](#). You can contact her for communications training or science tuition via her [website](#).

As part of the [FameLab International](#) competition in partnership with the Cheltenham Festival, finalists have three minutes to explain a concept from science, technology, engineering, maths or medicine. The grand final is in June 2015.

READING COMPREHENSION

1. Who is Dr Emily Grossman?

2. Take notes on what matters according to her about:

What people say when speaking in public	
The way they address the audience	
What tools people use to convey their message	

3. Explain what she understands by 'mirror neurons':

4. Read through the text and take notes on the tips she gives:
Do you know other techniques?

1/ Technical details

2/ Body language

3/ Being yourself

4/ Distracting movements

5/ Eye contact

6/ Metaphors and imagery

7/ Your presentation parts

8/ Adrenaline

9/ Other tools that can help and what to bear in mind



VIDEO N°2: *Tshiamo Legoale - Famelab International Final 2017*

from : <https://www.youtube.com/watch?v=9vjZxxUCh2E>

⇒ Discuss: does Tshiamo Legoale follow Dr Emily Grossman's tips?

1. Take notes on the following elements:

What she is searching to obtain	
Her occupation	
What she uses to reach her goal	
What she focuses on	
What is carried from the 'roots to the shoots of the plants	

2. What images does the speaker use to explain how gold particles are transported within the plant?

3. What is the scientific name of the process she describes?

4. a) Eventually, what does she hope to develop?

b) What would it represent for people?



Your turn!

➔ see **PROJECT#1 Oral Presentation: Chemistry of Everything**

ANSWERS

READING COMPREHENSION

1. Who is Dr Emily Grossman?

She is an expert in molecular biology, broadcaster and educator.

She trains contestants for the FameLab International competition.

2. Take notes on what matters according to her about:

What people say when speaking in public	<i>The first task is to get the content of what you're saying right (par. 1)</i>
The way they address the audience	<i>is also crucial (par. 1)</i>
What tools people use to convey their message	<i>body language, enthusiasm and tone of voice (par. 1)</i>

5. Explain what she understands by 'mirror neurons':

The fact that we tend to copy the emotions of people we have in front of us (when people smile at us, etc).

6. Read through the text and take notes on the tips she gives:

Do you know other techniques?

1/ Technical details
<i>'as little as possible!'</i> <i>(only if...)' absolutely necessary'</i> <i>'ensure that you explain the word or term immediately afterwards.'</i> <i>'Keep your words as simple and clear as possible, and use real-life examples and illustrations where possible'</i>
2/ Body language
<i>'Stand up straight, but relax any tension or stiffness in your body.'</i> <i>'gesture with your hands' (as long as...) 'it feels natural'</i>

3/ Being yourself

'celebrate your own uniqueness and use your own way of communicating'

4/ Distracting movements

'Always try and work out if the way in which you are moving is in keeping with the emotion or content you are trying to get across.'

'It is a good idea to video yourself'

5/ Eye contact

'help an audience feel immersed in the story'

'help you, as a presenter, to feel less nervous'

'make sure you include everyone in the room'

6/ Metaphors and imagery

'get an audience to really 'see' what you're trying to explain'

+ *'also remember it'*

'Analogies and metaphors' → if there are no real-life examples'

7/ Your presentation parts

'think of your talk as a series of self-contained mini-talks'

'you can always go back to (it) later'

8/ Adrenaline

'embrace the adrenaline rush and try to think of it as excitement rather than fear'

9/ Other tools that can help and what to bear in mind

'physical exercise (...) quick run or even just jump about to some music'

'have fun!'

'Think to yourself: 'This is my moment, where I get to talk about something that I'm truly passionate about'

GOING FURTHER

Extra information @ <https://www.cheltenhamfestivals.com/science/famelab/what-is-famelab/>



VIDEO N°1: *Famelab International Finalist Interviews 2017*

from: https://www.youtube.com/watch?time_continue=4&v=ISF02ZGwa2c

⇒ Watch the video presenting some FameLab competition finalists

As you watch, take notes on the following information:

Speaker #1	How she heard of FameLab	<i>Through Facebook</i>
Speaker #2	How many countries are represented	31
Speaker #2	Who pushed her to register	<i>Her supervisor</i>
Speaker #3	What he finds interesting in the event	Understanding how people think and act
Speaker #5	What communication means to him	<i>No more 'us and them' 'it's helping people understand science and helping scientists to understand what's actually important to people.'</i>
Speaker #6	Speaker's origin	<i>Mauritius</i>
Speaker #7	Why she participated	<i>Because her university told her about it. They had been impressed about the training a former student got at FameLab's previous edition.</i>
<i>Talks mentioned</i>		<i>'our immune responses to Malaria and what makes it so dangerous.'</i>
		<i>'eating pooh'</i>
		<i>'what is that new car smell?'</i>
		<i>'the translocation ability of plants'</i>
		<i>'the story of the first day of your life in which you were a single cell'</i>
		<i>'Having the green power'</i>
		<i>'epilepsy'</i>
		<i>'alkane reverse combustion'</i>
		<i>'using honey to boost the good bacteria that live in our gut'</i>



VIDEO N°2: *Tshiamo Legoale - Famelab International Final 2017*

from : <https://www.youtube.com/watch?v=9vjZxxUCh2E>

⇒ Discuss: does Tshiamo Legoale follow Dr Emily Grossman's tips?

1. Watch the next video and take notes on the following elements :

What she is searching to obtain	gold
Her occupation	geologist
What she uses to reach her goal	wheat
What she focuses on	What happens to the roots of plants that are placed on soils with gold
What is carried from the 'roots to the shoots of the plants	Metals Gold particles

2. What images does the speaker use to explain how gold particles are transported within the plant?

She uses the image of a train journey.

3. What is the scientific name of the process she describes?

The translocative capability of plants.

4. a) Eventually, what does she hope to develop?

b) What would it represent for people?

a) - Phyto mining: the mining of metals using plants.

b) It would help disadvantaged people 'walking in fields of gold'.



Your turn!

➔ see PROJECT#1 *Oral Presentation: Chemistry of Everything at the end of your WBK.*