

SCIE20001 Thinking Scientifically Notes

Weeks 1-4 – Science Communication Module

Video 1: Introduction to Science Communication

General information:

- Dr. Jenny Martin from the Zoology Department runs this module.
- Fresh Science is a competition that encourages young researchers to practice talking about their research to non-scientific audiences in an accessible way.

What is this module about?

Communicating science to general, non-scientific audiences.

We will focus on science blogs as a way to get the message out beyond academia and formal research.

Overview of Module:

- 1) **Introduction**
- 2) **What does the public think about science?**
- 3) **Writing about science**
- 4) **Activity 1 – blog writing style**
- 5) **Activity 2 – the power of a good headline**
- 6) **Conversation with Sara Phillips, ABC online Environment editor**
- 7) **Assessment Task Description.**

Why is Science Communication important?

- Science affects everybody e.g. climate change, vaccinations, genetically modified crops, and it is we have the wonderful opportunity to use our training and knowledge to inform and educate other, non-scientific audiences on our findings.
- Our job is to help people distinguish between real facts and pseudo-science
- Because we can inspire people and ignite everyone's inherent fascination with the world through providing access to science
- A lot of research is funded by the government, and thus taxpayers who have the right to know what research is taking place.
- Improves future employment prospects.

Where can you talk about Science?

- Face-to-face e.g. local school group or kindergarten
- Anyone e.g. taxi driver, hairdresser, shop assistant etc.
- Media e.g. radio or social media (twitter)

Extra Readings attached to this video

<http://www.sciencemediacentre.co.nz/2014/02/20/naked-science-why-scientists-need-to-communicate/>

What are the internal barriers that stand in the way of science communication?

- 1) **"It's Not what I signed up for"**

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- scientists sometimes aren't aware that science communication to the public is a significant element of what they do and many of them don't really see it as a priority.
- 2) **Time and effort**
 - time blogging or talking to journalists is time out of the lab, away from students. There's often little support for it from inside the institution for it anyway. Scientists are busy enough as it is.
- 3) **Lack of official recognition**
 - The science funding system and performance evaluations don't capture and reward the effort that goes into science communication.
- 4) **Elitism**
 - there's the sense, particularly for more abstract areas of science, that the public won't get it anyway, so there's no point in trying to communicate it.
- 5) **Self-consciousness**
 - There's the lingering perception among scientists that going on TV, tweeting or blogging is really just self-promotion, which isn't a typical trait of a scientist and something that doesn't go down particularly well with the scientific community. Scientists care what their colleagues think of them, so this is actually a major consideration.
- 6) **Media fears**
 - There's this unwritten rule that scientists shouldn't talk outside their own field. This, along with the fear of being misquoted or having their science sensationalised by the media, makes it easier to say and do nothing and just get on with things in the lab.
- 7) **Media policies**
 - Some scientists can't talk, even if they want to. They are beholden to the media policies of their institutions, which often preclude them from weighing in on controversial subjects or from talking about work of a commercially sensitive nature.

What are external barriers that stand in the way of science communication?

- 1) **Conflicts of interest**
 - A lot of scientists work for corporations and the government. The perception is that they will always just toe the company line.
- 2) **Never a straight answer**
 - Scientists add so many caveats and disclaimers to what they say, they end up just watering it down to bland, fence-sitting commentary.
- 3) **Duelling experts**
 - It seems the media can always find an expert to say whatever they want them to say and presenting opposing views is good for ratings.
- 4) **Says who?**
 - Is science the only way of knowing things anyway? Scientists don't have all the answers; their views aren't especially important.

What are the solutions to these barriers of science communication?

- **Context is key**

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- the value of scientific knowledge depends on the context and the better scientists are at providing that context, the better the public's understanding will be.
- **Have a plan**
 - Scientists need to have a communications plan – whether it be about their specific piece of research or commentary on their wider field of knowledge.
- **Institutional support**
 - Institutions need to help their scientists communicate their science, which involves giving them the required support and training and acknowledging that it will take some time away from their research.
- **Two-way street**
 - Scientists must communicate in order to learn, as well as educate.
- **Official recognition**
 - wouldn't it be great if Shaun's blogging and media interviews assumed an important place in his PBRF portfolio?

The Science Media Centre runs a science media training course for scientists called the Science Media Savvy. They have also launched a website full of tutorial videos and tip-sheets for scientists engaging with the media.

<https://blogs.egu.eu/network/geojenga/2014/06/19/is-it-your-duty-to-communicate-your-science/>

Excerpt from blog:

"...we also need to communicate it to the non-scientists and the non-specialists. Why? Well for multiple reasons: to inform and educate others particularly if the scientific results could impact their lives, e.g. natural hazards and climate change, raise awareness of your field and the dynamic nature of science.

For me, a very important aspect of science communication is to inspire! You may one day become the world leader in your field but after you retire who will take over the mantle from you? We obviously love what we are doing... so we have a responsibility to encourage, enthuse and empower the younger generation to get involved with the geosciences and equip them with similar communication skills so they can do the same".

<https://www.aps.org/publications/apsnews/201210/backpage.cfm>

Excerpts from article:

- "Many scientists assume that to "communicate science" would be to translate scientific findings, putting journal articles into plain language in a press release, in case anyone's interested. And sometimes it is. But that's not what I'm getting at...scientists should be a much greater presence in society, should be brighter on the public's radar, and that how, exactly, we do it, is up to each of us".
- "Don't think you need to teach the public a lot of science facts. Instead, show what science is, what it means, why we need it. Find a way to have a presence. Choose what to comment on, how to be involved, and what actions and issues to engage in. Be a source of wisdom."

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- “The public doesn’t need to keep up-to-date on journal publications. What people do need to know is that scientists are people, that science is an honourable, trustworthy, and powerful endeavour that people should look to for answers, and as a way to help think through decisions. Every child asks, “Why is the sky blue?” People need to know that scientists are the ones among us who never stopped asking that question and who found the answer.”

What does the public think about science?

Why do we need to know what the public thinks?

It’s all well and good for us to want to communicate science, but it’s important to first know how science is viewed by society so that we can shape and deliver information in certain ways to effectively get the message across.

How do we find out what the public thinks?

Fortunately, there have been many surveys.

A survey done by the Australian Academy of Science in May 2013 to track the general public’s knowledge of science.

One of the findings of this survey was that only 6/10 Australians know that it takes one year for the Earth to travel around the sun. 30% of Australians thought that it took only one day.

One of the other findings showed that approximately a quarter of the population believe that humans lived around the same time as dinosaurs.

What data do we have?

Australian National University Survey: Australia-wide surveys

- Do you identify as being more interested in sport or science?
 - Science, health issues, environmental issues... all came out ahead of films and sports.
 - Nearly half of the Australian public reports feeling uninformed about Science
- Who contributes most to the wellbeing of society?
 - Doctors, teachers, scientists, engineers etc. come out on top
 - Clearly the public thinks that scientists are important
- Should politicians rely more on the advice of scientists?
 - 52% agree
 - 28% strongly agree
 - The proportion of people disagreeing is relatively small.
- Does the government need to fund scientific endeavours?
 - 77% reported that government investment in research is essential for scientific progress.

Victorian Department of Innovation, Industry and Regional Development: Victoria-wide, 2007 and 2011

Surveys aimed to assess community engagement and interest in science.

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- “Is it important for the wider community to be aware of what’s happening in science and technology?”
 - 95% agree
 - This survey was conducted well and highly stratified.
- “Is it important for scientific breakthroughs to be well publicized”
 - 94% agree
- “It is critical that young people learn about science in order for them to effectively participate in society when they are older”
 - 93% agree
- It is important that the community should be consulted about advances in science and technology?”
 - 84% agree

Overall, it’s obvious that the Victorian community is really supportive of the concept of “science” and believe that science and technology improve one’s life and the wider society.

But do they feel the same about the actual scientists carrying out this important research?

How do people see scientists?

- “Scientists are trustworthy”
 - 63% agree
- “Do scientists over-promote their findings to further their own personal causes?”
 - 31% agree – this is still a significant proportion of the population.
- “Scientists place truth before profits”
 - 53% agree

Key results of this 2007 Victorian survey:

- 73% interested in science (86% technology)
- 32% interested in science (62% of these male)
- 16% not interested in science (62% of these female)
- 37% engage with science regularly (46% technology)
- 10% feel well informed about science (13% technology)

This survey then asked follow-up questions such “are you interested in science?”, “how often do you source scientific information” and “do you find this information hard to understand?” in order to divide the population into 6 segments.

Segment	Proportion of the population	Description of segment
1	10% (includes the highest population in 65+ years)	Interested in science but not active in searching for science information
2	37% (most likely to work full-time and have a higher level of education)	Interested in science, active in searching for science information, and able to find information that they can easily understand.
3	16%	Interested in science, active in searching for science

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		information, but either unable to find it or when they do find it, have difficulty understanding it.
4	9%	Neither interested nor uninterested in science and not actively searching for science information.
5	13% (largest proportion of students and majority are female)	Uninterested in science and not actively searching for science information.
6	6%	Neutral or disinterested towards science but active in searching for science information.

Follow-up questions about communication looked promising:

- 74% would be more interested in science & technology if they were discussed in everyday language.
- 67% would like to have more information about science
- 66% would like to have more information about technology

What was the key recommendation of this Victorian survey?

- “By carefully crafting messages and delivering them in ways that are appropriate to the population as a whole, with relevant examples and language to target specific groups where engagement can be enhanced, science and technology are likely to take on a greater significance in the lives of more Victorians”.

What is the overall message of these surveys?

That there are a lot of people who are interested in science and interact with science often but feel uninformed about it.

A reasonable proportion of people who are interested in science are having difficulty either finding science information or understanding it.

This a call to arms to all scientists that we need to present relevant and relatable science issue to the public.

How to engage people in science communication

1. Normalise science

- Relate outcomes, activity or benefits to daily life

2. Form stronger links between technology and the science that enabled it.

3. Health

- Most interest in health-related breakthroughs, especially “curing” cancer, dementia etc.

4. Water

- community concern about water is high.

5. Environment

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- High expectations that science will provide solutions to major environmental problems.
- 6. **Climate change**
 - Big issue to many
- 7. **Food**
 - Growing community concern
 - Water shortage, climate change, genetic modification, obesity epidemic etc.
- 8. **Children**
 - Conception, childbirth, childhood development, quality of life, vaccinations

What do scientists think about communicating with the general public?

- 93% of scientists agree that the public needs to know about social and ethical implications of scientific research.
- 91% of scientists agree that they have a duty to communicate their research to policy makers.
- 84% of scientists agree that scientists have the primary responsibility to communicate their research and its implications to the public.
- BUT only 50% of scientists are involved in science communication activities.

Why is the number of scientists participating in science communication so low?

Welcome Trust 2000, UK:

- Fewer than 20% have received training to communicate their research to a non-specialist audience.
- Fewer than 10% had received training to interact with the media, which is very confusing field to navigate.
- Young scientists were significantly less likely to be involved in science communication activities than more established scientists

If we repeated this survey in 2018, perhaps these results would differ due to the social media revolution and the fact that many young scientists are given a platform to share their research.

What do scientists need in order to communicate with non-specialist audiences?

- Specific training to communicate science
- Communication experience/opportunities to communicate
- Time for communication
- Training in media skills – a very particular kind of training
- Support (encouragement/recognition) from management for my communication activities.