**In-Class Activities: Communicating Science to Different Audiences**

**Introduction**

A variety of individuals and organizations are interested in scientific information, which means you must, as scientific communicators, tailor information to the needs of your audience. For example, researchers, agencies, industries, governments, charities, and the public are all interested in scientific information but engage with – and use it – in very different ways.

Many of the individuals and groups listed above rely on the press to obtain this information. Often, this information gets to the press via press releases written by the scientists behind the research. Getting your information to the public, and ensuring it is relayed correctly, therefore depends on your ability to communicate with and interest journalists, but it is also vital that you are able to convince journalists and editors that your work is relevant to their specific audiences.

**Writing Press Releases, News Articles, and/or Giving Presentations**

When writing a press release, a news article, or giving a presentation, you must:

1. **Decide who your main target group is**. For example, if your research has found evidence that an economically important species is becoming endangered, you would want to target: a) governments (to try to convince them to create new conservation policies) and/or b) charities (to try to convince them to build campaigns). *Note that there are many other target groups you may also wish to target.*
2. **Decide what information this group needs**. For example, if you wanted to affect political change, you would need to provide cold, hard facts, rather than emotive information showing the plight of this endangered species. It would probably also be wise to include some economic assessment that shows how much money might be lost if species numbers continued to drop. *Note that this ties in closely with the need to convince your reader why your material is relevant to them.*
3. **Use simple language that minimizes jargon.** Treat your press release or news article as if it is an elevator pitch, as if you are applying to have the material it contains appear in print, online, or on the radio (the press); similarly, treat your presentation like an interview in which you are trying to convince your audience that your message is important. Keep your language short and simple, and refrain from using any jargon that might cause someone to misunderstand or misinterpret you. Journalists, editors and producers are very busy. If they don’t understand something or see the relevance to their audience straight away, your message – and its importance – will be lost.

**Activity 1 (Work Together, 10 minutes)**

A) Try to list as many suitable target groups that you can think of for press releases that will focus on the ‘research scenarios’ in Table 1 below.

B) In all cases, think about which group(s) would be most interested in the information. When filling in a row, try to rank the groups in the order in which you would target them.

C) Finally, decide whether you would need to prepare different press releases for each group, or whether the same one could target more than one group. *Hint: Think about whether these different groups are interested in different information, or if the same main message applies to them all. Remember the importance of tailoring material to the specific needs and interests of target groups.*

**Table 1: Try to decide which target groups would be interested in each research scenario, and whether you would need to provide different information to different groups for each scenario.**

|  |  |
| --- | --- |
| **Research Scenario** | **Target Groups**  |
| **1) Friendly dolphin, ‘Slipper’, who was native to the coast of California where he swam with snorkelers in the wild, died of old age last weekend.** |  |
| **2) You have found evidence of life forms that are currently existing and multiplying on Mars.** |  |
| **3) You have found a way to share cloud computing server space that will reduce carbon emissions by up to 25% for companies based in Europe.** |  |
| **4) You have developed a new method of producing 3-D molecular maps of biological compounds that is faster than previous methods.** |  |

**Identifying the Characteristics of ‘Newsworthiness’: the Five W’s**

Once you have decided on your target audience(s), it comes to writing the press release, journalistic article or presentation. However, there are major differences between the structure and composition of a scientific journal paper (which is where many of these news stories originate) and a journalistic news article. These are summarized for you in Table 2.

**Table 2: Polar opposites: how the material in journal articles and journalistic news articles typically differs in the way it is presented to a reader.**

|  |  |
| --- | --- |
| **Scientific Journal Article** | **Journalistic News Article** |
| There is jargon everywhere you look (e.g. “endophytic hyphae”)  | Jargon is very rare, and defined when present (e.g. “Known by scientists as *pelagic* feeders, *which means they find their prey in the upper regions of the water,* these dolphins…”) |
| Facts-based, and very formal, typically following the IMRAD format (Introduction, Methods, Results, and Discussion) | Writing is conversational, like a story (e.g. “If you go down to the beach today, you are *unlikely* to be in for a big surprise, seeing as dolphins are becoming an increasingly rare sight…”) |
| Generally impersonal and objective | Emotive, and often subjective (e.g. “It’s terrible that dolphins are being caught in these fishing nets – we should all be ashamed and incredibly upset.”) |
| The main results come towards the end (IMRAD) | The main result(s) usually appear right at the start to hook readers in (e.g. “Over 50 dolphins have been found dead in abandoned fishing nets on the Californian coast this month.”) |
| The methods are often described in a lot of detail | The methods are often completely ignored |
| Generally written from a one-sided, objective perspective | Usually more than one perspective appears (e.g. Dolphin conservationist, Dr Lily Reilly, said: “We need to act now…” Meanwhile, fisherman, Rick Cox, said: “We are all being vilified here – I have never even seen a dolphin come within 200 m of my nets.” |
| Includes complex data | Focuses on simple data, often with an emotive hook (e.g. “50 dolphins, dying in nets”) |

To help you tell a clear story, keep this tip in mind when writing an article: the five W’s (the **Who, What, Where, When**, and **Why**) are what we really care about when reading a news story, so if you can fit all of these into the first one or two paragraphs, and in as few words as possible, you are sure to capture everyone’s attention.

For example, the following two paragraphs tell your readers exactly what they are going to find out about as they continue reading your article. Importantly, you have hooked them in less than 50 words by including the five W’s (A =What, B =Why, C =Where, D =When, E =Who):

**Over 50 dolphinsA** have been **found dead in abandoned fishing netsB** on the **Californian coastC** **this monthD**, according to a recently published report put together by dolphin conservationist, **Dr Lily ReillyE**.

To develop this story further, you should add depth (more specific details) and decrease breadth (focusing on one or two things) in subsequent paragraphs to further develop the tale you are telling.

**Activity 2 (work together, in pairs/threes, 15 minutes)**

Watch the Grammar Squirrel video resource about ‘Journalistic Science Writing’ to start thinking about the important issues a bit more.

If you (or your partner(s)) have a laptop with you, take it out and go to the PLOS Biology homepage ([www.plosbiology.org](http://www.plosbiology.org)). Next, spend a couple of minutes looking through some of the recent articles and choose one that interests you.

If you (or your partner(s)) do not have a laptop with you, your instructor will provide a recent journal article for you to work with.

Spend 10 minutes or so reading through your article. Then:

1. Try to list what the five W’s are for this article
2. Decide which group(s) would be interested to read the information if it was presented in a journalistic news article

**Activity 3 (work together, in pairs/threes, 10 minutes)**

1. Choose one group to target and write one or two paragraphs that incorporate the five W’s (try to write these paragraphs as simply and succinctly as possible)
2. Think about how you would go on to develop your story in more detail in the next few paragraphs

Some useful hints to help you complete this activity include:

The following tips are designed to help you communicate science news to non-specialist audiences, whether you are writing press releases, news articles, or giving presentations.

1. Use simple, succinct language.
2. Use everyday analogies to explain complex concepts.
3. Tell a story: don’t just duplicate a formal, journal article.
4. Use images and illustrations.
5. Cut out all unimportant details (a good story has one narrative, not many).

**Activity 4 (work together, in pairs/threes, 10 minutes)**

Take turns, in your pairs/threes, to stand up in front of the class. Read the title of the journal article that you wrote a couple of paragraphs about, and then read your paragraphs to the class. When everyone has done this, your instructor will lead a brief discussion about how effective some of the paragraphs were. *Note that your instructor might split the class into smaller sub-groups depending on size for this activity.*

Some questions to think about:

1. Do you think you would have wanted to read a news article about the information presented by your peers?
2. How could the information your peers presented have been improved for the target groups it was intended to interest?
3. Do you think the science was misrepresented in any way?
4. Which section of the published journal articles you adapted did the majority of the interesting material come from?

**Communicating Uncertainty**

Uncertainty can’t be ignored when communicating science, but it’s important to report it in a way that will help your audience to understand.

Science is *uncertain* because it is a creative discipline (there are many different ways of conducting research and analysing and interpreting results), knowledge is always expanding (so new interpretations appear all the time as technology and research improves) and it is based on probability (scientists test hypotheses to find support for certain explanations but rarely prove them to be correct).

There are five tips that you can put into practice when communicating uncertainty to boost the chances of your reader(s) understanding things. You can:

1. Make any numbers (and statistical analyses) easy to interpret
2. Contextualize these with an everyday comparison
3. Choose descriptive language very carefully
4. Use figures and images as well as words and numbers
5. Communicate timelines (when might new data be available?)

For more help, and useful advice, we recommend you watch the ‘Communicating Uncertainty’ Grammar Squirrel video resource.

**Activity 5 (work alone, homework)**

To make you think critically about four of these tips, and to underline their importance, read the following paragraph of information from a fictional study before trying to answer questions that relate to it:

*According to our analysis, which used linear regression models to compare the effect of temperature on the growth of invasive beetles, approximately 52% of the variation in their growth was explained by variations in temperature. The general trend was for higher temperatures to result in faster growth. Environmental officers in British Columbia believe there is only a 17% chance that the beetles will expand their range to BC, however, so farmers in the province might not need to worry yet. That prediction was based on older data, but more has been collected and is currently being analyzed; we should have a more accurate assessment in the next 10 days.*

For the four questions below, choose the most suitable option for communicating the related uncertainty, and explain why the other two options are unsuitable:

1. Make any numbers (and statistical analyses) easy to interpret
2. Approximately 52% of the variation in beetle growth is explained by temperature
3. Approximately 50% of the variation in beetle growth is explained by temperature
4. Temperature is the major factor affecting beetle growth

**2)** Contextualize these with an everyday comparison

*Environmental officers in British Columbia believe there is only a 17% chance that the beetles will expand their range to BC. That’s about as likely as:*

1. Rolling a six with one roll of a six-sided die
2. A friend’s birthday falling on a Saturday this year
3. Selecting either a Two or a Three from a 52-card deck when playing poker

**3)** Choose descriptive language very carefully

*Environmental officers in British Columbia believe there is only a 17% chance that the beetles will expand their range to BC. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.*

i) That means that it is extremely unlikely that the farmers need to worry

ii) That means that it should at least be on the farmers’ minds

iii) That means that it is possible, but it is very unlikely to happen

**4)** Communicate timelines (when might new data be available?)

i) We should wait until we have new data before making a statement, however

ii) That is what we currently know, but we will have new information in 10 days

iii) We will update that information in the near future