

# Tips to improve communication in science

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In general
<ul style="list-style-type: none"> <li>1 take the time it needs</li> <li>1 detach your person from your work</li> <li>1 request feedback</li> <li>1 sacrifice art for clarity</li> <li>1 put the information where it is expected</li> <li>1 have a clear message</li> <li>1 use different levels of information</li> </ul>

1. Posters	2. Orals	3. Papers
<p><b>For the 7 seconds scientist walking by:</b></p> <ul style="list-style-type: none"> <li>1 have an informative title</li> <li>1 have one central picture or sketch illustrative of your work</li> </ul> <p><b>For the 30 seconds scientist slowing down:</b></p> <ul style="list-style-type: none"> <li>1 put the conclusions at the top</li> <li>1 use few words</li> <li>1 use simple graphics</li> <li>1 use large fonts</li> <li>1 organize the information in a logical way</li> <li>1 use narrow columns (for speed reading)</li> </ul> <p><b>For the 2 minutes scientist fully stopping:</b></p> <ul style="list-style-type: none"> <li>1 put your photo on your poster</li> <li>1 prepare a 30 seconds</li> </ul>	<p><b>Content:</b></p> <ul style="list-style-type: none"> <li>1 prepare a logical outline</li> <li>1 include suspense</li> <li>1 have few messages (one is best, three maximum)</li> <li>1 know your most important message</li> <li>1 make transitions between all slides</li> <li>1 use reminders (the outline is a good one)</li> <li>1 use simple graphics</li> <li>1 use simple tables</li> <li>1 use simple backgrounds</li> <li>1 use animations with parsimony</li> <li>1 include some information that you do not plan to say aloud</li> <li>1 be aware that the audience will want to read everything</li> </ul> <p><b>Delivery:</b></p> <ul style="list-style-type: none"> <li>1 write your talk</li> <li>1 practice your talk</li> <li>1 time yourself</li> <li>1 resist the temptation to speak very fast</li> <li>1 do not hesitate (practice your talk again)</li> <li>1 vary the intonations of your voice</li> <li>1 look at the audience</li> <li>1 address the entire audience (use different levels of</li> </ul>	<p><b>Everywhere:</b></p> <ul style="list-style-type: none"> <li>1 avoid adjectives (for example "this is very large")</li> <li>1 avoid judgemental statements (for example "this is interesting")</li> <li>1 provide numbers</li> <li>1 put the information where it is expected</li> <li>1 if you mean the same thing, use the same word</li> </ul> <p><b>In every sentence:</b></p> <ul style="list-style-type: none"> <li>1 start with the subject</li> <li>1 make sure that the "subject" used is the topic of the sentence</li> <li>1 put the verb right after the subject</li> <li>1 put the detailed information at the end</li> <li>1 make short sentences (change a ", " into a "." when you can)</li> </ul> <p><b>In every paragraph:</b></p>

<ul style="list-style-type: none"> <li>talk with guidance and highlights</li> <li>1 include some technical details on methods</li> <li>1 include most important results</li> <li>1 include references</li> <li>1 let the person go</li> </ul>	<ul style="list-style-type: none"> <li>information)</li> <li>1 speak to the back row</li> <li>1 explain what you are showing</li> <li>1 point to the important information</li> <li>1 be confident</li> <li>1 do not talk to a noisy audience, wait for attention</li> <li>1 have a positive attitude towards your talk</li> <li>1 don't use a pointer all the time</li> <li>1 when you use a pointer, hold it still</li> <li>1 put few words on slides (no long sentences)</li> <li>1 learn your opening sentence by heart</li> <li>1 learn your closing sentence by heart</li> <li>1 if you must finish before the end, think, don't rush</li> <li>1 finish with your most important message</li> </ul>	<ul style="list-style-type: none"> <li>1 the first sentence announces the content of the paragraph</li> <li>1 the middle develops the idea</li> <li>1 the last sentence wraps up and introduces the next paragraph</li> </ul> <p><b>In an abstract:</b></p> <ul style="list-style-type: none"> <li>1 be concise</li> <li>1 state methods</li> <li>1 state results</li> <li>1 highlight impacts</li> </ul>
<p><b>For the "I will read it later" scientist:</b></p> <ul style="list-style-type: none"> <li>1 print small versions of your poster</li> <li>1 put pre-prints of associated papers</li> </ul>		

Prepared by Corinne Le Quéré, with input from Eric Saltzman, Tom Pederson, Gill Malin, and David J.C. MacKay.

Additional tips from a summary made by Anonymous based on L. A. Olsen and T. N. Huckin, Principles of Communication for Science and Technology, 1983. New York: McGraw-Hill.

## A technique of ordering information to increase readability of sentences and paragraphs

1. Put given information before new information
  - 1 **Poor:** The 5-year plan does not indicate a clearly defined commitment to long-range environmental research. For instance, the development of techniques rather than the identification and definition of important long-range issues is the subject of the plan where it does address long-range research.
  - 1 **Better:** The 5-year plan does not indicate a clearly defined commitment to long-range environmental research. For instance, where the plan does address long-range research, it discusses the development of techniques rather than the identification of important long-range issues.
2. Put topical information in subject position
  - 1 **Poor:** Not all investors will benefit from All-Savers Certificates. Investors exceeding a deposit of \$7,931 would have an after-tax yield far lower then with alternative investments, such as money market funds. Alternative investments would also yield better after-tax yields and no penalty if the certificate was redeemed within the one-year maturity period.
  - 1 **Better:** Not all investors will benefit from All-Savers Certificates. Investors exceeding a deposit of \$7,931 would have an after-tax yield far lower than with alternative investments, such as money market funds. Investors redeeming their certificates within

the one-year maturity period would also have a lower after-tax yield and would pay a penalty besides.

3. Put "light" noun phrases before "heavy" noun phrases

- | **Poor:** I have sent my maiden aunt, who lives in the western suburbs of Chicago with her two dogs and six cats, a family portrait.
- | **Better:** I have sent a family portrait to my maiden aunt, who lives in the western suburbs of Chicago with her two dogs and six cats.
- | **Poor:** The idea of sending her a picture, which includes Sarah's new baby in her Easter dress, struck me suddenly last night.
- | **Better:** Last night, I was suddenly struck by the idea of sending her a picture, which includes Sarah's new baby in her Easter dress.
- | S \_\_\_\_\_ V \_\_\_\_\_ **Preferred**
- | S \_\_\_\_\_ V \_\_\_\_\_ **OK if subject not too long**
- | S \_\_\_\_\_ V \_\_\_\_\_ **Not preferred**

edition, 1999 (the first edition was published in 1959!)

- 1 R. Heller, *High Impact Speeches: How to Write and Deliver Words That Move Minds*, Prentice Hall, 2002.
- 1 S. L. Montgomery, *The Chicago Guide to Communicating Science*, The university of Chicago Press, Chicago and London, 2003.

### Ways of satisfying these criteria

1. Passive-active alternation

- | **Poor:** A typewriter is a machine that prints alphabetic characters, numbers, and other symbols. Christopher Scoles invented it.
- | **Better:** A typewriter is a machine that prints alphabetic characters, numbers, and other symbols. It was invented by Christopher Scoles.
- | **Poor:** Christopher Scoles was a nineteenth-century inventor who made the life of the secretary much easier. The typewriter was invented by him.
- | **Better:** Christopher Scoles was a nineteenth-century inventor who made the life of the secretary much easier. He invented the typewriter.

2. Equative shift

- | **Poor:** There are several forms of industrial pollution the average person should know about. Acid rain, caused by coal-burning plants in the Midwest, is a serious form of industrial pollution.
- | **Better:** There are several forms of industrial pollution the average person should know about. One form is acid rain, caused by coal-burning plants in the Midwest.
- | **Poor:** Recently, acid rain has been discussed widely in the news media. A serious form of industrial pollution caused by coal-burning plants in the Midwest is acid rain.
- | **Better:** Recently, acid rain has been discussed widely in the news media. This acid rain is a serious form of industrial pollution caused by coal-burning plants in the Midwest.

3. Indirect object shift

- | **Poor:** I am sending my professors in Advanced Marketing, Marketing Research, and Psychology copies of my research paper.
- | **Better:** I am sending copies of my research paper to my professors in Advanced Marketing, Marketing Research, and Psychology.
- | **Poor:** I gave a copy of my English research paper on the psychologic problems caused by sleep deprivation to my Psychology teacher.
- | **Better:** I gave my Psychology teacher a copy of my English research paper on the psychologic problems caused by sleep deprivation.

### Recommended books

- 1 W. Strunk Jr. and E. B. White, *The elements of Style*, Longman Publishers for the fourth