SPEAKING WITH CONFIDENCE AND CHARISMA
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Center for Science Communication
co-sponsored by the BRET Career Development Office
and VUMC Faculty Affairs

December 7, 2010

The following packet contains handouts and tipsheets on public speaking and creating oral presentations in the sciences:

1. Engaging your Audience: Suggestions on Delivery
2. Organizing Your Presentation: a General Outline
3. Preparing Notes for Speaking
4. Using PowerPoint
5. Effective Use of Graphs and Tables
6. Article: “Why Are So Many Scientific Talks So Dull? Do They Have To Be that Way?”
ENGAGING YOUR AUDIENCE: SUGGESTIONS ON DELIVERY
Rebekah Maggor

1. **Connect with your Audience.**
Public speaking is a dialogue between presenter and audience. You aim to engage your audience with your ideas. Think of it like playing ball. You throw out an idea; the audience catches it and throws back signals or comments in response.

Take the focus off yourself and concentrate on engaging your audience.

*Playing Ball: Three Steps*
1. Are you ready? (make eye contact—prepare the audience to catch your idea).
2. Throw the ball (toss your idea to your audience).
3. Did you get it? (Did your idea “land”? Did the audience catch it?)

Land your points. Instead of looking down at your notes mid-sentence, stay connected with your audience until the end of the sentence and “land” your idea. Then look down at your notes to “scoop” up the next idea.

2. **Breathe!**
Breathing between sentences will help you calm down, slow down, and speak clearly and distinctly.

- To start your presentation, inhale calmly as you make direct eye contact with at least 2 people in the audience.
- Don’t “trail off” at the end of sentences. Breathe in between sentences so you can maintain vocal energy through the end of your phrase.

3. **Connect with your Body.**
Your whole body participates in the act of speaking.

- Energize your presence and “own the room” by standing up straight and breathing.
- Warm-up before your talk—it will help you deal with nerves and focus on the task at hand.
- Be conscious of your body language. What signals are you sending through your gestures, stance, and tone of voice? Do you have any distracting habits? (“Signal vs. Noise”)
- Let your hands rest at your sides, or on top of the podium or table. Don’t clasp them or put them in your pockets. Don’t worry about planning hand gestures. Focus on your audience and when the urge for a gesture comes, they will rise.

4. **“Speak the Speech”**

- Calibrate the volume of your voice to reach the back row.
- Articulate operative words (terminology, names, and key phrases) clearly and muscularly.
- Vary your pitch, rate, and volume to stress important words and phrases.
ORGANIZING YOUR SCIENCE PRESENTATION

A General Presentation Outline
This talk outline is a starting point, not a rigid template. Good speakers average at least two minutes per slide (not counting title and outline slides), and thus use up to eight slides for a fifteen minute presentation. If you need to leave five minutes for questions within the 15 minutes—reduce your presentation to a maximum of five slides.

- **Title/author/affiliation** (1 slide)
- **Forecast** (1 slide)
  Give the gist of the problem attacked and insight found. (What is the *one idea* you want people to leave with? This is the "abstract" of an oral presentation.)
- **Outline** (1 slide)
  Give the structure of the talk.
- **Background**
  - **Motivation and Problem Statement** (1-2 slides)
    (Why should anyone care? Most researchers overestimate how much the audience knows about the problem or question.)
  - **Related Work** (0-1 slides)
    Cover superficially or omit; refer people to your paper.
  - **Methods** (1 slide)
    Cover quickly in short talks; refer people to your paper.
- **Results** (3-5 slides)
  Present key results and key insights. This is main body of the talk. Its internal structure varies greatly as a function of the researcher’s contribution. (Do not superficially cover all results; cover key results well. Do not just present numbers; *interpret* them to give insights. Do not put up large tables of numbers.)
- **Summary** (1 slide)
- **Future Work** (0-1 slides)
  Optionally give problems this research opens up.
- **Backup Slides** (0-3 slides)
  Optionally have a few slides ready (not counted in your talk total) to answer expected questions. (Likely question areas: ideas glossed over, shortcomings of methods or results, and future work.)

**PRACTICE** your presentation aloud with your PowerPoint slides so you can:
- Time your presentation and stay within the allotted time limit.
- Use your visual aids comfortably and effectively
- Make eye contact and engage with your audience
- Leave ample time for questions

Adapted from “Oral Presentation Advice from Mark D. Hill,” Professor of Computer Sciences and Electrical and Computer Engineering, University of Wisconsin—Madison
SUGGESTIONS FOR PREPARING SPEAKING NOTES

While several of these reminders might strike you as obvious, speakers often ignore them when preparing to speak.

- Use an outline format for your notes:
  An outline helps you visually recall the structure of your talk. Placing numerals and letters by the various points in your talk also helps you distinguish main points from subordinate ones. If you indent supporting points, the outline will be easier to read while you are speaking.

- Do not use your PowerPoint slides as your outline. Print out a separate outline. The PowerPoint slides exist to illustrate your points to the audience.

- Keep the outline as brief as possible:
  Too much detail on your notes encourages you to read them to your audience. When this happens, you can't maintain eye contact with your listeners and you lose any sense of engagement. (Remember the three steps in the ball-throwing exercise: 1-Are you ready? 2-Throw the ball. 3-Did you get it? Stay engaged.)

- Place visual cues on the outline:
  A good speaking outline includes the content of the talk as well as reminders about how you wish to proceed. You might mark certain sections of notes where you wish to pause, or to speak more slowly or loudly to achieve emphasis. You might remind yourself about when to move to the next slide. Perhaps you want to pause at particular spot to ask the audience for questions.

- Make your speaking notes legible:
  Under the stress of speaking before a group, you may find it more challenging to decipher your notes. You'll need to be able to read your notes at a distance -- they need to be clear and large enough for you to do so easily.

- Practice speaking with the notes you have prepared:
  That's the only way to make sure your notes will make sense to you at the time you'll be giving the final presentation.

Adapted from the Mary Washington College Speaking Intensive Program
http://www.umw.edu/spkc/resources/students/handouts/structure/suggestions.htm
BASIC POWERPOINT TIPS
Rebekah Maggor

Overview:
- Plan your talk first, and then create your PowerPoint.
- The visual aids exist to illustrate what you say—they are not the main event.
- Present one topic per visual aid.

For each slide, ask these questions:
- Why is it there?
- What does it show?
- Does it support the main point or key message?
- Is there anything which doesn’t need to be there?
- When will it be shown? When will it be removed?
- Can the people in the back row see it clearly?

Structuring your PowerPoint Slides:
- Use a minimal amount of text, in a large clear font.
- Resist the temptation to use fancy/cool fonts.
- Sans Serif fonts such as Helvetica or Arial project most clearly.
- Use at least a 20 point font.
- Font color should contrast sharply with background (yellow/very dark blue, black/white)
- Be consistent with the background and avoid backgrounds that are difficult to read from.
- Proof your slides for spelling, repeated words and grammatical mistakes.
- Keep figures as simple as possible—if the PowerPoint resolution is forcing you to oversimplify your information, provide a handout instead.

Performing Successfully with PowerPoint:
- Practice to make sure the slides are well-integrated into the speech.
- Plan placement of slides prior to the speech.
- Check to see that the technology is functioning, and that you know how to operate it.
- Do not display the slide until the relevant moment. When finished remove it, or cover it.
- Do not stand directly in front of the slide, stand to the side and face the audience.
- Print out a separate outline so you can turn away from the slides and make eye contact with the audience.
- When referring to a specific detail on the slide, point, don’t leave your audience guessing.
- Do not distribute materials during your speech. If you have prepared handouts, distribute them before or after you speak.
SUGGESTIONS FOR USING GRAPHS AND DRAWINGS IN YOUR POWERPOINT
Adapted from Scientists Must Speak by D. Eric Walters and Gale Climenson Walters

Conveying the “big picture”

- Very simple, schematic drawings work well—the fewer lines the better.
- Details included on the printed page or computer screen are often not suitable for the low resolution of PowerPoint.
- Details important to publication may be safely omitted from the PowerPoint. Refer the audience to your paper.

In print this graph is readable, but when it is projected onto a screen there are
- too many lines
- the numbers are too small.

This is a simplified version of the above graph
- the lines are bolder
- the legend is replaced with much larger labels.

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Tables versus Charts

- The below table gives us the numbers, but it takes a fair amount of time to look at the numerical data and understand what is going on.

<table>
<thead>
<tr>
<th>Amino acid</th>
<th>Percentage</th>
<th>Amino acid</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alanine</td>
<td>8.3</td>
<td>Leucine</td>
<td>9.0</td>
</tr>
<tr>
<td>Arginine</td>
<td>5.7</td>
<td>Lysine</td>
<td>5.7</td>
</tr>
<tr>
<td>Asparagine</td>
<td>4.4</td>
<td>Methionine</td>
<td>2.4</td>
</tr>
<tr>
<td>Aspartate</td>
<td>5.3</td>
<td>Phenylalanine</td>
<td>3.9</td>
</tr>
<tr>
<td>Cysteine</td>
<td>1.7</td>
<td>Proline</td>
<td>5.1</td>
</tr>
<tr>
<td>Glutamate</td>
<td>6.2</td>
<td>Serine</td>
<td>6.9</td>
</tr>
<tr>
<td>Glutamine</td>
<td>4.0</td>
<td>Threonine</td>
<td>5.8</td>
</tr>
<tr>
<td>Glycine</td>
<td>7.2</td>
<td>Tryptophan</td>
<td>1.3</td>
</tr>
<tr>
<td>Histidine</td>
<td>2.3</td>
<td>Tyrosine</td>
<td>3.2</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>5.2</td>
<td>Valine</td>
<td>6.6</td>
</tr>
</tbody>
</table>

- Graphs let you convert this numerical data into pictorial forms which can have more immediate impact.
- Pie charts, such as the one here, can quickly convey percentages or fractions of a whole subject.
Why Are So Many Scientific Talks So Dull? Do They Have To Be that Way?
by D. Eric Walters, Ph.D.

When you attend a conference or a seminar, what is the probability that very good science will be presented in a very dull way? Unfortunately, this happens too often.

**Why are so many scientific talks so dull?** There are several reasons. First, science has a very strong written tradition. You are expected to write your results in such a way that others can reproduce them. You are expected to give sufficient data to support your conclusions. If you over interpret your results, others will discover this and your reputation will suffer. Data and detail are highly valued; hype is not. Therefore, scientists tend to be cautious and monotone in presenting their results, and they are thorough in showing the data. This can lead to extremely unexciting presentations, with overly complicated graphs, tables and diagrams.

There is another reason. Most of us do not get much formal instruction in oral presentation in the course of our scientific training. It simply is not considered as important as doing the science and writing the papers. Only later do we discover that our speaking skills can have a tremendous influence on the course of our careers.

**Do they have to be that way?** No, of course not. We can all improve our presentation skills. First, we must realize that oral presentations serve a role much different from our written work. Papers and books are the place to present all of the experimental procedures, details, and data. The oral presentation is the place to *tell the story* of your research. The story describes the circumstances and thought processes that led you to do the work, highlights the frustrations you and your colleagues experienced along the way, and conveys your elation when you succeeded. Most important, an oral presentation is your chance to share with others why you find your topic interesting. Be sure to share your enthusiasm with your audience. This helps the listeners to connect with what you are saying.

The oral presentation is *not* the place to tell everything you know about your subject. It is a good idea to decide in advance what will be the key message you want listeners to recall long after the talk is over. If you can state that key message in a single clear sentence, you will have a foundation on which to organize your talk. Your presentation will have a clear focus.

There are other ways to improve as well. Visual aids (slides, overheads, PowerPoint presentations, and others) are usually better if they contain a few key words in a large font than if they become a script which you read to the audience. They can read faster than you can speak. If you put the whole story on the screen, they will read rather than listen. On the other hand, if you just give them a few key words, they will know just enough about what you are talking about to desire to *listen* to what you have to say about it.

Practice and experience are helpful as well. Look for opportunities to speak, and enlist colleagues to give you constructive feedback about your presentations. Rehearse often if you have to give an important presentation, so that you will stay within the time limit and will feel comfortable with your talk.

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Eric Walters is Professor of Biochemistry and Molecular Biology at The Chicago Medical School. He and his wife Gale, a food scientist, are the authors of *Scientists Must Speak: Bringing Presentations to Life*. He has been a member of The Science Advisory Board since January 1998.

[http://www.scienceboard.net/community/perspectives.46.html](http://www.scienceboard.net/community/perspectives.46.html)