

How to Present a Paper: A Speaker's Guide¹

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Congratulations. You are one of only a few who would bother reading a guide on successful presentation style. Most people don't believe they need to learn how to make a presentation. Stand up, present the data, offer conclusions, and answer questions. Yep. Easy. And don't forget the title and summary slides.

But there is a lot more to it than that. Communication. Presentations are one form of communication - a very important form. The way we communicate dictates a great deal of how successful we'll be in our careers. Think about it. In your own experience is "success" more strongly tied to technical ability or to one's "presentation?" In reality, both are important. Your ability to communicate greatly impacts your success on both project and career levels. Being correct but not having the ability to convince others means you will not be heard or seen in many situations.

Hard to accept. But believe it. And this is why this document was born. The goal is to stimulate your thinking on what it takes for you to be a good communicator when making a formal presentation. There is no right or wrong method. It is important that you think about the suggestions contained herein and to adapt only those ones that fit in with your style and comfort and that are appropriate for the audience and the occasion. The authors

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profess no special training in presentation etiquette and cannot warrant that, in fact, some of these suggestions may not be acceptable by professional standards. But that is OK. We have seen enough bad talks to appreciate the value of a few pointers that we'll share with you. The goal is to challenge your thinking. Don't let the years of scientific method training inhibit your communication style. Be bold. Take charge of your communication skills and your career.

Although this document applies to all, we have written it from the perspective that students generally have been less exposed to some of these ideas that others who have learned from experience. You'll find that these skills will be invaluable whether you pursue an academic, government or industrial career in both the applied and theoretical sciences. Just remember that these guidelines are intended to assist you in developing a workable style of your own. Read, think, experiment and then adopt those elements that work for you and your audience.

This note is divided into four sections:

1. "What to Say and How to Say It" - choice and organization of the material to be presented.
2. "Getting Through to the Audience" – presentation style.
3. "Visual and Aural Aids" - proper use of presentation materials and the microphone.
4. "Question Time"

Earlier versions of this note have appeared in [1, 3, 4].

1. What to Say and How to Say It

The selection of material to include in a talk, and how it is arranged and presented is crucial to success.

- *Communicate the Key Ideas*

Make sure that your talk emphasizes the key ideas and skips over what is standard, obvious, or merely complicated.

- *Don't get Bogged Down in Details*

Details are out of place in an oral presentation. This rule cannot be over-emphasized. The audience generally wants an overview of the work so that they can determine whether additional details are worth pursuing.

- *Structure Your Talk*

A good speaker always lets the audience know exactly where they are and where they are headed. Your presentation should be broken into several distinct parts, each with its own objectives and style. Each part should be dearly delineated. The audience should be steered gently from one part to the next.

- *Know Your Audience*

Make sure that your talk is prepared at the right level. Think through the average level of expertise in your audience and present your results accordingly. Don't try to impress unless it is a job interview.

- *Use an Organized Approach*

A simple three-part template for producing a talk is as follows:

A. Introduction

B. Body

C. Conclusion

The suggestions below include “common knowledge” tips as well as some ideas that you may want to try that will set your talk apart from the others. Be imaginative in your presentation style. Try new things and see if they work. Your goal is to discover what works best for you and your audience so that they will understand and retain your message. If you are successful with your presentation, you'll be successful in your career.

A. The Introduction

This first section is possibly the most important part of your presentation. It sets the tone for the entire talk. It determines whether the audience will prick up their ears, or remain slumped in their chairs. A lot of snap decisions about your competency are made before the Introduction is over. First impressions are very important.

- *Define the Problem*

An amazing number of speakers forget this simple point. No matter how difficult and technical the problem; it can usually be described succinctly and accurately in less than five minutes. If the audience doesn't understand the problem being attacked, then they won't understand the rest of your talk. For your slides, condense the problem into a very few carefully chosen words.

- *Motivate the Audience*

Explain why the problem is so important. How does the problem fit into the larger picture? What are its applications? What makes the problem nontrivial? Avoid broad statements such “Membranes are good for the environment and therefore we studied the impact of pH on performance.”

- *Introduce Terminology*

The use of terminology and jargon should be kept to a minimum, but is impossible to avoid entirely. All terms *must* be introduced early.

- *Discuss Earlier Work*

There is nothing more frustrating than listening to a talk that covers something that has already been published. But this happens a lot today. Don't let this happen to

you. Come prepared and explain why your work is different from past work.

- Emphasize the Contributions of your Paper
Make sure that you explicitly and succinctly state the contributions made by your paper. The audience wants to know this. Often it is the only thing that they carry away from the talk.
- Consider putting your Conclusion in the Introduction
Take a bold step and put a short conclusion in the introduction. Let everyone know up front the *direction* you are headed so that the audience can focus on the details.

B. The Body

This contains the meat of your presentation, and is the point at which the attention of the audience will start to waver if you messed up your Introduction. Consider the following suggestions.

- Abstract the Major Results
Describe the key results of the presentation. You will probably have to get a little technical here but do so gradually and carefully.
- Explain the Significance of the Results
Focus on anything unexpected or crucial to supporting your conclusions
- Sketch a Proof of the Crucial Results
The emphasis is on the word “sketch.” State the hypotheses and experimental design as simply as possible.
- Use Props and Pictures
“Things seen are mightier than things heard.” - Alfred Lord Tennyson
Bring something to show the audience (e.g., a membrane device), if possible. Be sure to add figures and photos to your slides, where appropriate. Digital photos are an easy way to share with the audience the physical arrangement of your experimental setup.
- Don't Inflict Pain on the Audience
“The secret to being a bore is to tell everything.” - Voltaire circa 1718
Some presenters feel that the audience should fully appreciate the pain it took them to reach their conclusion. Never waste an audience's time taking them through a step-by-step history of your project if it is for no other reason than to document the great challenges you had to overcome. Save that for your boss. Only emphasize the lessons learned. Don't try to convince an uninterested audience that you were a superhuman.

- *Avoid Complex Tables*
Don't cram a lot of numbers into small tables on your slides. Never.
- *Have a Purpose and Conclusion for Each Slide*
Always ask yourself "Why do I need this slide?" Does it help support my conclusion or is it peripheral to the talk? Consider putting a written conclusion at the bottom of each key slide. Each slide should have a point that is being made. Don't force the audience to conclude for themselves. They may get it wrong!

C. The Conclusion

Your aim here is to restate the lessons learned in a short, concise manner.

- *Hindsight is Clearer than Foresight*
You can now make observations that would have been confusing if they were introduced earlier. Use this opportunity to refer to statements that you have made in the previous three sections and weave them into a coherent synopsis.
 - *Be Open About Problems*
Be open about any uncertainties in your work. This way you may defuse antagonistic questions during question time.
 - *Indicate that your Talk is Over*
An acceptable way to do this is to say "Thank you. Are there any questions?"
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2. Getting Through to the Audience

Once you have selected and organized your material, the next major hurdle is when you find yourself actually standing in front of the audience. Faulty delivery can ruin even a well-prepared talk.

- *Practice Your Talk*

This is true with speakers of all experience levels. It is amazing how much better a presentation can be when it is practiced. The practice must be verbal, not just mental. It does not have to be done in front of an audience. Practicing forces you to choose your words carefully. For many reasons, a couple verbal practice rounds is one of the most effective ways to improve your communication effectiveness.

- *Use Repetition*

The tried and true strategy for presentations is to: "Tell them what you're going to tell them (the Introduction). Tell them (the Body). And then tell them what you told them (the Conclusion)." Don't be afraid of this repetition. Sometimes repetition is the only way to

clarify misconceptions.

- *Convey Enthusiasm, Excitement, Confidence*

“Nothing great was ever achieved without enthusiasm” – Ralph Waldo Emerson
Believe in what you are doing. Let the audience know that you have something very interesting to share with them. An enthusiastic speaker can bring life to an otherwise bland subject.

- *Use Humor^[5]*

Although humor should not be a major focus in a scientific conference, it can play a very powerful role in keeping the audience’s attention. Remember that your goal is to educate the audience, not simply to present material to those who care to listen. Humor and enthusiasm are useful techniques to reach this goal.

- *Don’t Over-run*

“What orators lack in depth they make up to you in length.” - Montesquieu, 1767
There is very little that is more exasperating than listening to a talk that drags interminably past its scheduled finishing time. The quality of a talk is almost always inversely proportional to the time that it over-runs. Unless it is explicitly stated otherwise, when you are told that the talk is to last for 30 minutes, plan to talk for *at most* 25 minutes, and leave 5 minutes for question time. If in doubt about the proportions, then enquire. Don’t try to cover too much material.

- *Maintain Eye Contact*

Maintain eye contact with your audience. Spread your attention throughout the audience instead of concentrating on any one person or group (even if they are the only ones who matter). If presenting at a conference, be sure to glance periodically at the session chair, who will signal you when you are running out of time.

- *Control Your Voice*

Speak clearly and with sufficient volume. Don’t speak in a monotone. Avoid utterances such as “Um, ah, er”, etc. (This is a sure giveaway that you haven’t practiced your talk). Avoid fashionable turns of phrase. Avoid hype.

- *Control Your Motion*

Project energy and vitality without appearing hyperactive. Use natural gestures. Try not to remain rooted in one spot, but avoid excessive roaming. Try not to fall off the dais. If you do manage to do something embarrassing, don’t stop the presentation. Just keep going.

- *Take Care with Your Appearance*

Good grooming and dress is important but avoid appearing overly ostentatious. Casual business dress is often the norm today for colloquia and conference presentations such as NAMS. A jacket and tie for men and professional attire for women is also common, particularly if an individual is interested in seeking employment in the near future.

- *Minimize Language Difficulties*

English appears to be a common language for scientists of all nations. It is a good idea to get a native speaker to look over your transparencies before you deliver the talk. Use a prepared text, if necessary. In general, the scientific community is accustomed to and tolerant of foreign accents and modes of speech.

- *Don't Start Your Talk with an Apology*

How often have you heard someone start with an apology such as "I really didn't have enough time to do my presentation . . .?" The speaker may be doing nothing more than trying to deal with his/her own nervousness, but as a result the audience now has a lower opinion and expectation of the speaker and their presentation.

- *Try Not to Get Anxious*

The best antidotes for nervousness are practice and experience. Make sure you prepare adequately beforehand and practice the talk.

- *Be Different*

This part is up to you. Observe what successful presenters do that make their presentations so interesting. Some have a natural "theatrical" skill that many of us would never be able to emulate. Don't worry. Instead, focus on many of suggestions in this manual that anyone can master and use in their presentation. If you can master the structural issues, you'll soon find the confidence that seems to come so effortlessly to natural speakers.

3. Visual and Aural Aids

Now that you have a well-prepared talk and can deliver it with style, the next stumbling blocks are the overhead projector and the microphone.

- *Use Overhead Projection Transparencies (subject to change)*

The accepted method of presentation differs from one scientific community to another. At the moment the North American Membrane Society makes heavy use of manual transparencies and an overhead projector. Some still prefer the use of 35mm slides.

In the future we would expect to see increasing use of electronic display devices connected to a computer. This is becoming the preferred means of presentation in many situations but is still problematic for conferences (as of April 2000). Always check if uncertain.

- *Make Legible Transparencies*

Use a computer to prepare your transparencies. If this is impossible, you must take great pains to ensure that your writing is legible. Make sure that the text is large enough to be read from a distance.

- *Don't Overload Transparencies*

Don't put too much on each transparency. Try not to write full sentences. The transparency is an adjunct to your talk; it should be used for emphasis, to resolve ambiguity, for precision and for the retention of information over a short period of time.

- *Don't Use Too Many Transparencies*

The number of transparencies per talk will vary from person to person, and will depend upon the type of material being presented and the amount of text on each transparency. Plan an average of 1.5 to 2 minutes for each transparency (shorter for photos or simple drawings).

- *Avoid Slide Covering*

Avoid situations where you want to show only part of a transparency. Make two transparencies instead.

- *Use Color Effectively*

The use of color can enhance a presentation, particularly when used in moderation in the figures and diagrams. Only use high contrast color combinations. What looks legible and attractive on a computer screen will invariably look worse on the overheads. And keep the number of colors to a minimum.

- *Use Pictures and Tables*

Remember the old cliché "A picture is worth a thousand words?" Use photos and drawings whenever possible, but only when they illustrate the point you are trying to make.

- *Beware of the Microphone*

The session chair should assist in attaching the microphone to your clothing. It typically consists of a small box that goes into a pocket, and a very small microphone on a clip which should be attached to your clothing as close to your face as possible.

- *Familiarize Yourself with the Stage*

Before the session starts, walk up to the podium and look things over. Is a pointer provided? How does it work? What kind of microphone system? How is the projector operated? Introduce yourself to the session chair if you haven't already. If you have 35mm slides, be sure they are mounted properly and are in the correct order.

4. Question Time

As we have already seen, it is customary to end a presentation with a short period for questions. You can expect to receive three types of question. The first is the genuine request for knowledge, which should cause you no difficulties if you are adequately prepared. The second is the selfish question, in which the questioner merely wishes to draw attention to him or herself and elicit wonder at his or her ability to devise such an incisive and cogent question. It is polite to take a few seconds to compose a reply that

directly or indirectly compliments the questioner.

The third and most important category is the malicious question. The best defense against these types of questions is to be prepared, be polite, and avoid getting involved in a lengthy exchange. Offer to discuss it after the talk, since a one-on-one discussion is likely to be less acrimonious than a public one.

Do not be afraid to answer “I don’t know” to some questions

Plan. Experiment. Practice. And good luck!

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