

How We Present Our Science: Tips for Students

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People fear public speaking more than they fear spiders and snakes; at least that is what the surveys tell us. If one wants to raise the bar a little higher yet, give the speaker a scientific topic in a room full of scientists that includes a few familiar faces. Is it any wonder that SWS student presenters sometimes get a little flustered? (OK, bosses supervisors and senior scientists stumble too!).

Regardless, there were some excellent student presentations at the Lake Placid SWS 2002 meeting. The great difficulty for the student awards committee is selecting the top honors. The best of the student presentations were amongst the best of the whole conference. Our hats are off to you.

A group of faculty and students were in the Birch Bar during the SWS Lake Placid, New York Conference engrossed in an animated discussion. The topic was public speaking and it became obvious that some students needed more information about ways to turn a good presentation into an exceptional presentation. In this article I discuss four topics toward that end: (1) confidence in speaking, (2) construction of the presentation, (3) conveying meaning, and (4) critique—a synopsis of reviewer comments generated during the 2001 and 2002 student presentations.

1. Confidence and Fear Management

Why is public speaking so intimidating to so many? Probably because

of the great uncertainty of what is getting ready to unfold. The podium is the only barrier between our fears and us. We all dread being made to look foolish in front of our peers, colleagues, and potential employers. Unchecked, this uncertainty can loom irrationally large and can prompt a fight or flee instinct in us (neither of these is appropriate I might add). The adrenaline brings on the classic symptoms of stress. The list is long and you may recognize some of them: trembling, racing heartbeat, perspiration of hands and armpits, trembling voice, blushing and blotching, weak knees, shallow breathing and an inability to focus eyes or thoughts. Through some quirk of genetics I don't get the large patchy blotches, but I have experienced all of the other symptoms to some degree. These are the end products of stress responses that have escaped your management system. There are ways to control them though.

Firstly, if you are prone to nervousness, go into your talk prepared. Prepared in nauseating detail. Practice your talk from start to finish both mentally and out loud in front of a mirror or friends. You might be so comfortable with it that it is boring to you. Remember that it is still fresh and new to your audience though, so keep it snappy.

For those of you who have some experience speaking, you can avoid sounding too rehearsed by memoriz-

ing just the first three or four minutes of your talk (the most nerve-wracking part!). Also, memorize the transitional lines of your talk, such as those that link the results and discussion, or link different data sets. Practice the rest of the talk just a few times.

Secondly, have a typed out script of your presentation in your hand (stapled so you can't shuffle the page order if you drop it). You probably won't need this but it is your safety net that will inspire confidence in knowing you can always fall back on reading *verbatim*. Many conference papers are read word for word in Sociology and Psychology symposia, even those presented by experienced speakers.

Thirdly, break your speaking tasks down into smaller pieces so the swarm of little things don't converge simultaneously at the podium and overwhelm you. Get to your venue early, check that your projection system works, find the light switches, practice with the laser pointer (oh my how those things can shake!! Hint: prop your arm on the podium to stabilize it) and check the microphone to hear your own voice. Stand at the podium, look out at the empty room and visualize your audience. Now you own that podium and it is as comfortable as an old pair of shoes. The more uncertainty you can eliminate, the more attention you will have to focus on communicating. The only thing left is to bring on the audience!

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Some other reassuring things to remember include: (1) Your audience really wants you to succeed and as a student, they will understand if there are a few glitches—this is new to you. (2) If a hostile question comes at you, the audience *always* gives you, the speaker, the benefit of the doubt. (3) Audiences have amazingly short memories. When we totally flub something, nobody remembers it by the end of the week. If you learned from the experience, it was worth it. And finally, (4) for questions, you have an ace-in-the-hole called IDN or “I don’t know”. Once you are comfortable honestly saying these three words you are bulletproof. Any question that comes at you will either be something you can answer or an IDN. So there, even the question and answer period is covered.

2. Constructing the Presentation

Keep your message simple. Never forget that your presentation is given amongst many other presentations, that audiences are information-saturated, the rooms are often dark and the audience is not generally motivated to work hard at understanding small details or difficult points. Generally you should be shooting for a conceptual degree-of-difficulty that a high school junior could understand with a little work.

There are many ways to build a presentation but one of the best is to use the following seven-point formula.

a. Descriptive title with author name(s) on a background slide that helps set the context (a swamp or a mallard or a gene sequence—something related to your topic).

b. Outline/Opening Objective. A simple, quick statement of what you are going to show or address tells your audience what they are get-

ting ready to hear. Complete sentences are not necessary. Use bullets.

c. Key question or hypotheses. In a 15-minute talk it is unlikely you can do justice to more than two or three take-home messages so only toss out two or three key questions. Each deserves a couple of sentences of background by way of introduction.

d. Methods. Keep these very short. If people want to know more they can ask. This is usually the one place where students are the most comfortable because in this sea of uncertainty, at least their methods are cut and dry. Consequently, they spend far too much time discussing minutiae and trivial details. Don’t do this. Use broad strokes and general terms. However, highlight any part of the methods that you consider novel.

e. Results. A simple listing of results in the same order as the questions in c. Keep this short too.

f. Conclusions. This is the most interesting part of the whole talk to most audiences. Expand this section (see conveying meaning below).

g. Acknowledgements. Briefly list your funding source and those helpers that were indispensable, yet who didn’t quite qualify for coauthorship.

If you use Power Point (the most common practice these days) be sure to have a backup plan in case the power goes out, the computer bulb burns out, the files are corrupted or incompatible, etc. Backups can be as elaborate as a set of color overheads or a series of sketches you can quickly make on a flip chart or white board. Think through this contingency plan. If you are bringing a burned CD with your talk on it, consider saving your talk in a second

Power Point format called “Pack and Go” that locks your fonts and side-steps the computer defaults that might contain a different, font-scrambling version of the software.

3. Conveying Meaning

You are not at the podium to simply *survive* your 15 nervous minutes or to reduce your exposure to hard questions, or to avoid all controversy. You are there to hand over meaningful information and engage your audience in thought and maybe a little dialog.

Remember those three questions, objectives or hypotheses from our outline? Their message content is the engine, transmission and tires of your talk. How you treat them and re-present them and their answers to your audience determines if your message travels, how well and how far. The *meaning* of your results is like the bodywork—it can make the message identifiable, useful and aesthetic and memorable.

Question ➡ Results ➡ What it means.

Too often talks are ended with a simple listing of findings with no interpretation, no application to the problems at hand, and no description of how understanding was advanced. We should not simply assume that our audience will make the connection between findings and their importance or use. Remember, it is folks like me that are tired, drifting into daydreams of the coffee break doughnuts or being distracted by my own impending presentation that need to be spoon-fed the meaning of each talk. A symposium is the perfect place to try out some fresh ideas, offer some speculation, and prompt your audience of experts to take a

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crack at the hard questions or share their considerations of your approach.

4. Critique –reviewer comments from SWS 2001 and 2002 Student competition

I went through 165 reviewer score sheets from the last two student paper competitions (Chicago 2001 and Lake Placid 2002) and collated judges comments into 10 broad categories (Figure 1). Judges noted deficiencies and suggestions for improvement worthy on approximately 20% of all presentations.

These comments provide an opportunity to learn from our collective mistakes. My somewhat arbitrary

categories correspond to Figure 1 and are described below.

1. Rationale Lacking: It was not clear why some presentations were presented. In some cases the information was either not relevant or already well known.

2. Distracting Mannerisms: During presentations some speakers turned their backs to the audience to look at the screen, fidgeted with papers, or waved their hands and laser pointer wildly.

3. Objectives Lacking: Direction for the talks could be conveyed in several ways but some judges sought a formal statement of objectives and did not get them.

4. Analyses Wrong: Judges were sometimes baffled, disagreed with tests, or thought there were errors. Some wanted to see estimators of variability (confidence intervals or standard error bars). Seemingly these conflicts were not cleared up in questioning either.

5. Layout/Color: Six comments addressed visual presentation design. Only two comments were on colors (use of red and green combos can be invisible to the colorblind), and most sought more straightforward visuals with less clutter.

6. Organization: The largest complaint here was the ordering and sequencing of presented materials; skipped background, discussion dur-

Top 10 Problems with SWS Student Presentations (2001-2002, N = 165)

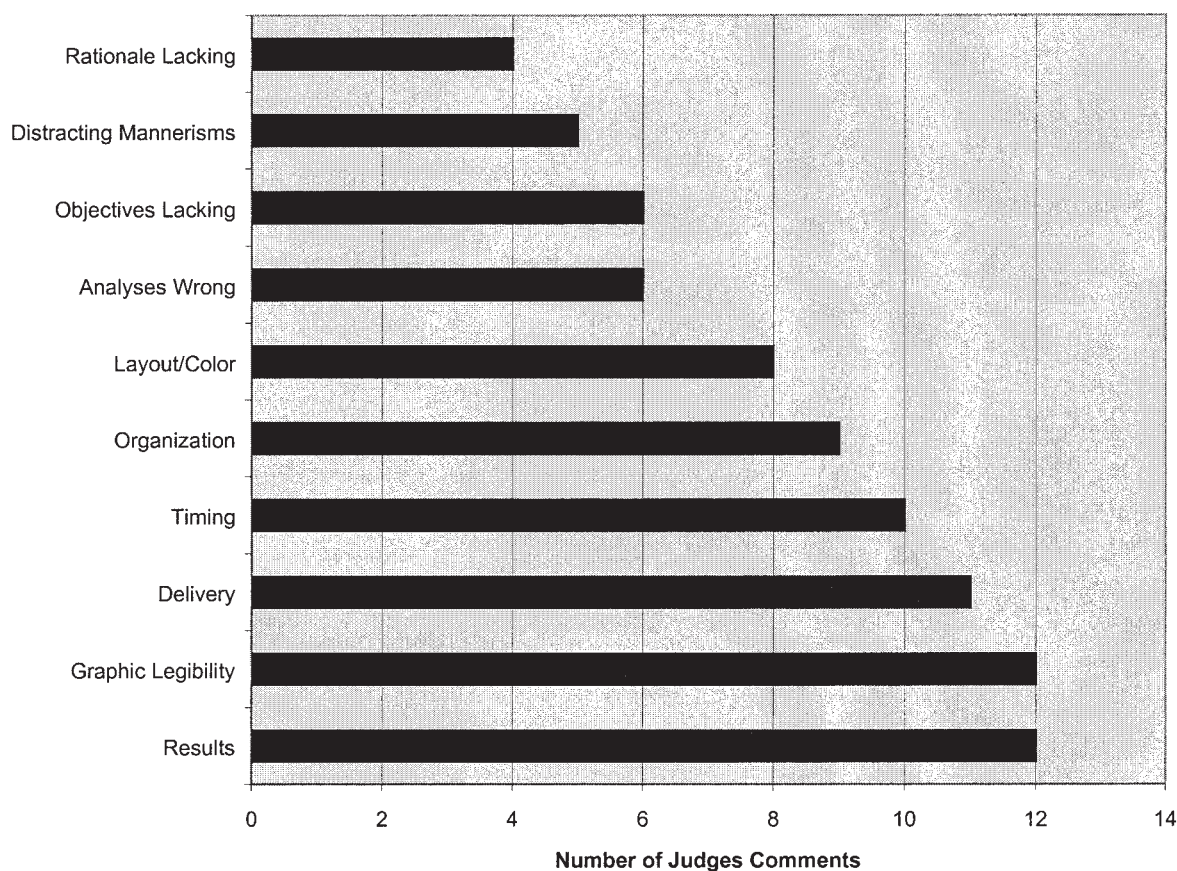


Figure 1

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ing the introduction, or seeming chaotic mix of methods, background, and results.

7. Timing: Two talks too short, four talks were too long, and four had too much time spent dwelling on methods or background and insufficient attention to results and conclusions.

8. Delivery: Most comments were constructive guidance on ways to reduce nervousness, pace one's delivery, speak louder to be heard, or directly deal with questions.

9. Graphic Legibility: Nine of the 12 comments dealt with font size (all too small) on graphics. The remaining comments addressed flow

or interpretability of graphs or tables.

10. Results: An understandable but nagging frustration with student presentations is that many are based on preliminary work, often in year 1 of a MSc. degree. Because final results are not in hand, there is much hand waving and speculation. SWS remains committed to providing a practice forum for students entering wetland science and this is not to discourage preliminary work; however, students should probably realize that they are not likely to score as highly in student competitions until their projects have results in presentable form.

The student paper competitions are at the core of one of SWS' men-

toring and educational principles. Our volunteer panel of judges led by Pat Megonigal¹ takes this task seriously but with an obvious pleasure in watching students develop. We encourage all students and all supervisors of students to participate or encourage participation in the student competitions as part of their professional development.

Occasionally we hear a presentation and say "Wow! That was really thought-provoking". Those are generally the talks that went directly to the meaning of an issue or question and dealt with it. Employing these techniques just may help you win the next student presentation award!

¹ I thank Pat Megonigal for providing score sheets and for reviewing this manuscript. Credits go to my graduate students Jon Hornung and Kathryn Martell for adding student perspectives that hopefully increase the usefulness to other students.