The Woman Physicist’s Guide to Speaking

Heidi Jo Newberg
Rensselaer Polytechnic Institute

One of the most important skills for scientists regardless of gender is giving lectures. Public speaking is a learned skill that requires practice, effort, and confidence building. Lectures are a tremendous opportunity to communicate accomplishments to other scientists and to influence scientific discovery.

Preparing your presentation

Decide what you would like your audience to remember after it is over. Some people are very good at listening and will hear and understand every sentence you utter. Most people, including me, lapse in and out of attention during a presentation. One way to reach those with questionable listening talents is to keep your own main points up front, where the audience is still awake. Then spend the body of the talk explaining the main points, be sure to take sufficient time to explain each graph, picture, or idea. End with your conclusions, which reiterate the main points you want the audience to remember

Each visual should be self-contained and self-explanatory, since some people don’t listen well and can’t read everything on the slides. The labels on all plots should be large enough and the symbols defined well enough that the person who returns to consciousness in the middle of your description of the plot can attempt to catch up with you.

Make sure your list of conclusions is still visible at the end of the talk, which you end by saying, “I will end there,” or “Are there any questions?” Many people in the audience are going to search for answers to questions at this point, and the conclusions will jog their memories as to what you have said. The list aids in the formulation of questions; the questions and answers are an important component of the talk.

Beginning speakers should practice their talks before giving them—once for hour-long talks, three times for 20-minute talks, and 12 times for 5-minute talks. You should practice your talk once in front of friends or coworkers who can offer you constructive suggestions. Avoid being defensive if there is criticism, and revise your talk in any way you think is beneficial. These practice talks are also another way to gain confidence in the public talk because you feel silly explaining your project to a group of people who know most of the information. Whatever you do, do not change your talk the second you get it in front of an audience. Record it if you have a home video camera, play it back, and make any changes in the talk. Once you commit to the talk, you are stuck with it.

Good speakers make all of their most important points in the allotted time, with sufficient time left over for questions. Always test your visuals before the presentation to allow time for changes if necessary. If possible, the visuals should be tested in the same room with the same equipment with which the presentation will be given. As a backup, always have copies of computer-projected talks on separate memory sticks or in a disk file or available for electronic transfer over the Worldwide Web. Alternatively, the most important visuals can be printed out as transparencies. If you are traveling to speak, your talk should come with you in your carry-on luggage.

Answering Questions

For the beginning speaker, the prospect of a question can be daunting. No one, even the most expert researcher in your particular area, will know the answer to every question. What is important in the question session is to make sure you understand the question—sometimes by repeating it, to think about what you know about the answer, and to answer it as fully and coherently as you can. I have been asked what the size scale of an image that I am presenting is, or how long it takes for a dwarf galaxy to orbit around the Milky Way, or what a quasar consists of, and I have answered, “I don’t know.” Big mistake. While it is okay to say “I don’t know” in an offhand way that communicates “It is not important” when asking a detailed question about a fine point you have not thought about, everyone will learn more if you tell the audience what you do know about the question. The person who asked what the scale of my image was did not care whether it was 5 arcminutes or 10 arcminutes, but would have been happy to know that it was at least not arcseconds or degrees. I did know that it was a piece of a 13-arcminute image, but I did not know how big the piece was, so I simply said, “I don’t know.” In that same lecture, a physics student asked me what a quasar was. Now, of course, I knew that most astronomers think a quasar is a black hole with matter falling into it from an accretion disk, and that for some reason it is ejecting charged particles along its magnetic poles. But I haven’t critically reviewed the literature, and I do not understand the physics of how gravitational potential energy from matter falling into the black hole from the accretion disk is channeled into charged particles along the magnetic poles. So my first reaction was the wrong answer, and communicated my description of a quasar while waving my hands around and saying it was a hand-waving answer. The audience learned more about my incredible inability to lose confidence in myself than about the physics of quasars.

Consider the question, be answered with respect and dignity, to the fullest extent you know the answer, and without apology for those parts you do not know or techniques you have not tried. If a question is very detailed or your opinion is not of general interest to the audience, you can offer to answer a complex question in person after your talk. However, do not overdose this response because it could be interpreted as “I don’t know.”

Deliver with Confidence

The first thing that happens when you stand up to speak is that the organizer or session chair hands you a microphone. Women typically do not have deep booming voices that carry over lecture halls, and should use amplification at every opportunity; there is nothing worse than preparing and delivering a great but inaudible lecture. Some microphones come with an alligator clip that is designed to attach to a collar, puzzle alligator clip, belt, or pants waist that male speakers wear. Women who are not prepared for the audio assistance often start their talks with an awkward exchange with the session chair while they try to figure out how to attach the audio apparatus.

In most cases, it is acceptable to wear anything from jeans and a T-shirt to a stylish suit with a skirt. Clothing should be carefully chosen to be comfortable and to accommodate a microphone. If you wear a skirt or pants made of a sturdy fabric, then you have a waistband on which the battery pack can be clipped. When speaking, I usually wear a skirt or cotton skirt, a cotton button-down shirt, and a jacket or vest. If the alligator clip cannot be attached to my skirt for any reason (old-fashioned styles can only be clipped in the direction that men’s shirts button), it can be clipped to the jacket or vest. Fashion boots can be easily worn with a skirt and, if chosen well, are a comfortable and secure alternative to heels, which are a trip hazard when you are nervous and need to walk on polished floors covered with temporary wiring. You should not wear distracting clothing when giving a talk. After all, you are already the focus of attention and you would like to have the audience concentrate on the physics.

Young women often make the mistake of beginning their talks with an apology or self-deprecating comment of some sort. I once saw a young woman deliver a prize lecture for a national astronomy award. In her first sentence, she declared that the judges had made a big mistake in choosing her for the award. Although I think this was intended partly as a joke, it also showed her recognition that research results come from the combined work of many minds and fingers. As women, we tend to see scientific endeavor as a web of activity, and to feel, in some way, that we are not accomplishing a common goal. It is somewhat foreign for us to think about distinguishing ourselves—moving ourselves up through a ranking or pecking order. Do give credit to your collaborators, but do not do it at your own expense. This is your chance to shine. The confidence with which you present your material is very important to your success in communicating your ideas. Although it is somewhat taboo for women to assert or assume they know everything, it is a sign of strength for men to question their own abilities. If a woman shows through her words and manner that even she does not believe in her own abilities, then a man will find it quite reasonable that he should not believe in women. But if a woman shows through her words and manner that she believes in herself and her own abilities, then a man will recognize that she has every right to believe in herself. Women who are not prepared for the audio assistance often start their talks with an awkward exchange with the session chair while they try to figure out how to attach the audio apparatus.

Extra copy of presentation on memory clip

No nonsense hair, make-up, jewelry

Sensible no-trip footwear. In a pinch, boots can also be used to hold microphone power pack.

Lock of confidence

Jacket or vest accommodates a microphone on either side.

Skirt or pants with sturdy waistband for microphone.