

Syllabus: Effective Scientific Presentation and Public Speaking

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Ross S. Stein

Geophysicist, U.S. Geological Survey
Science Board Chair, Global Earthquake Model
TEDx talk, [Defeating Earthquakes](#)

*The course would be 40% group discussion and 60% individual coaching.
Everyone will come away a more skilled and confident
speaker than they were before.*

The Keys to the City

- The three best strategies: Pick a fight, tell a story, or do a demo
- The first 2 min of the talk are the most important: Make your case
- Scientific public speaking resembles good dinner-table conversation
- People want to be intrigued, inspired, and moved—not just informed
- You have to earn the audience’s interest; they do not owe you their attention
- Rehearse: The more you rehearse, the more spontaneous and natural it will feel to the audience, and you won’t rush because you’ll know how long the talk runs.

Each participant would use their upcoming meeting talk or poster (e.g., Fall SEG, AGU), or upcoming job talk, as their class project. The course uses numerous clips from archived presentations and talks, and archived slide sets and posters, to illustrate the good, the bad, and the ugly. Participants will be assessed on the improvement from their initial to their final presentation.

Here are the thirteen topical elements that will be covered in group discussion:

Designing and titling the talk

The title should make a pledge to the audience about content: A short, playful title signals that you will not snow the audience with a highly technical delivery. For example, there is a famous TED talk about what a neurologist’s stroke taught her about the brain, entitled “My stroke of insight.” To the extent possible, the talk title should make your argument, just as the title of a Nature or Science paper would.

Opening the talk

In a several sentences, say what the problem is, what you found out or will argue for, and why it’s important—in simple language. This could be as short as a sentence, or as long as about 125 words. You are forecasting the arc of the story. It’s best to do this without

slides, because you are establishing a personal connection between yourself and the audience. For this, slides get in the way. Good dinner conversation needs no slides.

The body of the talk

Here, you are building an argument, solving a problem, explaining the two sides of a debate, making a confession, proving something wrong, testing a proposal, or falsifying an hypothesis. You are not disgorging knowledge. You are not showing people how much work you did, or how much you know.

Closing the talk

A talk should feel to the audience that you are building to the culmination, not that you are running out of time, so do not speed up as you near the end. They should feel that you are closing the circle, returning to the beginning, but now wiser than before.

Preparing slides for the talk

The slides should be beautiful and uncluttered. Each slide should be titled, not with what is shown, but with the main point of the slide. There should be no sentences and definitely no paragraphs. Label every axis, avoid jargon. Only the simplest of tables (4 x 5) should ever be used. Never read the text in your slides; you will be competing with yourself, and you will lose.

The importance of pacing and voice

Smile, pause, and modulate your voice to give people cues about what is important. Speaking in a monotone does not work in dinner conversation either. Pauses are the secret of good speakers; they allow the audience to reflect, to catch their breath, to formulate a question, to hang on the edge of their seats. Don't rush. Rushing kills talks. Most people speak much too fast.

Questions and Answers

Every question is a good question, but every question does not need to have an answer from you. Reward the audience for asking questions by responding crisply. Most speakers give answers that are much too long. Never interrupt the questioner to begin your answer. Every question tells you what others are thinking, particularly clarification questions while you are giving your talk.

Poster presentations

Talks are speaker-driven, but posters are reader-driven. Do not force the reader to start at the beginning and follow your sequence. Make it easy for them to glean the key point with a banner headline and a dramatic central graphic, and then move in any direction. Don't number figures or put boxes around them. Keep fonts huge and words to about 300 in total. Do not give a set poster spiel; instead, respond to reader questions and interest.

Speaker Introductions

Introductions matter. They set the stage, build expectations, and elevate the exchange. Tell us something important about the speaker you are introducing, especially if it's something the audience does not know. Don't just read their CV; that's deadly. Unless the speaker is very young, talk about what they have accomplished, not where they went to school.

Preflight check-out

Always check your slides at the podium with the actual computer that will be used well before you give your talk, such as first thing in the morning, or at the coffee break before you speak. Always restart your computer before presenting with it; this frees the cache and minimizes the likelihood of a freeze or crash. Always have the presentation on a memory stick as a backup. This is your responsibility, not the moderator's.

Job talks

A job talk differs slightly from a typical 40-min institution talk. You are not just presenting a piece of research, you are also showing what's in your tool box. So, if you can display a bit more about your range of skills, interests, and scientific experiences, that would be helpful to the faculty. If you are applying for a teaching position, show how well you can explain complex concepts. A key element of the job talk visit is how to handle the dozen or so 30-min faculty meetings you will have—a grueling form of speed-dating.

Talking to the press

Here it is in a nutshell: Tell them what you know, and tell them what you don't know—in language that your mother's friends will understand. Speak with passion, conviction, simplicity, metaphors, and humor. Pause frequently to give the reporter a chance to speak. Unless it's a live interview, feel free to rephrase your answer as many times as you need to make it crisper; reporters will appreciate this.

Persuasive Speaking (fundraising)

This is the most difficult of all. Unless the process is formalized, the key to pitches is that 50% of the talk must come from the people you are trying to influence: It must be a conversation, not a presentation, and they must feel they have been heard. It's not about you, it's about them, so do not suck up all the oxygen with your urgency to win them over. Listening, conversing, and most importantly, reading their body language is your job. You must read their minds, and they must hear themselves say something positive about the proposal while you are in the room, or you will lose.