

One Way to Give a Talk

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Initial considerations

1. Why do we give talks?
 - a. Communicate our science to people within and outside our field.
 - b. Provide a synthesis of multiple findings.
 - c. Advance our careers.
 - d. At a more fundamental level:
A central goal of giving a talk is to induce neural plasticity in your audience.
More on this below.

2. What is required for a successful talk?
 - a. During the talk:
 - i. The audience needs to understand
 1. Why they should care: why is question being addressed important?
 2. The context for the work: what is known?
 3. The gap: what is not known?
 4. The questions you are addressing.
 5. What you did, what you found and what you learned: methods, results and discussion
 6. What it all means: synthesis.
 - ii. The audience should be
 1. Awake.
 2. Excited.
 3. Impressed.
 4. Convinced.
 - b. After the talk, the audience should **remember**.
 - i. **Your job is to create positive memories in your audience that will go on to change the way they think and act.**
 - ii. Ideally your talk could inspire them to
 1. Think your field is interesting.
 2. Follow your work.
 3. Hire you.
 4. Come join your lab.
 5. Want to collaborate with you.
 6. Fund you.

Remember that you know your field and the material you are presenting; your audience typically does not. Your job is to make things make sense to them, not to explain things to yourself.

Now we can ask a neuroscientific / psychological question:

What is required to learn and remember complex information?

- 1) Context: a connection to what is already known is critical; knowledge builds on previously stored information.

- 2) Organization: a conceptual scaffold for the new information being presented.
- 3) Links: clear connections among the various elements.
- 4) Attention: memory is much improved when attention is directed appropriately during learning.
- 5) Repetition: important findings / conclusions should be presented multiple times.

We need to consider three other factors when preparing:

- 1) Who is the audience?
 - a. An effective presentation to a group of 10 year olds differs substantially from one to a group of senior PIs in your field.
 - b. What is the background of the people you are speaking to?
 - i. You need to start from what they know, but not spend so much time rehashing what they know to bore them.
 - ii. The background of the audience will often be broad, and you cannot always explain things so everyone understands, but it is worth trying.
 - c. How much intrinsic interest are they likely to have in your topic?
- 2) How long is the talk?
 - a. Typically talks range from 10 minutes to 50 minutes, with some that are even longer.
 - b. You cannot compress a good 50-minute talk into a 10- or 30- minute talk without removing content.
 - i. Rapid summaries of many results are typically unsatisfying.
 - ii. One slide / minute is a reasonable rule of thumb.
- 3) How formal is the talk?
 - a. Lab meetings differ from SFN symposia.
 - b. But ... there is no such thing as an “informal” talk: The guidelines and suggestions here apply to virtually all talks, even lab meetings.
 - c. Even in a less formal talk, you should stand up unless you are unable to do so.

For our purposes, we can now go back to the seven elements mentioned above for what an audience needs to know during the talk.

Talk elements

0. Title slide

- a. Your title, your name and your affiliation

1. High level introduction to the overall question: why should anyone care?

- a. Everyone in the audience should be able to follow your introduction and understand the importance of the topic.
- b. Examples:
 - i. Memories and their impact on behavior.
 - ii. Interactions of molecules that determine how cells work.
- c. Slide design considerations (more of these later in other sections):
 - i. Use a 16x9 aspect ratio, not 4x3
 1. You get much more usable space
 2. This is now the standard for projectors and TVs
 - ii. Titles on every slide provide context and repetition.
 - iii. Use a high contrast color scheme
 1. Avoid yellow on blue and similar combinations
 2. You can change this across slides if you want more variety.

- iv. Font size: NOTHING less than 16 point EVER.
 - 1. Everyone in the room should be able to read everything on every slide easily.
 - 2. I use 32 point for titles and sizes from 28 to 18 point for text.

2. The context for the work: what is known?

- a. What is the working model in the field?
- b. This provides context for the rest of the talk.
- c. Slide design considerations:
 - i. Use a diagram, not words, if at all possible.
 - ii. Use animations to direct your audiences' attention.

3. The gap: what is not known?

- a. What key additional information is needed to get to the next level of understanding or solve the problem?
- b. This can be hard to be certain about if you are early in your career, so ask for advice.
- c. Also provides context for the rest of the talk.
- d. The importance of filling the gap helps maintain attention.
- e. This may or may not be its own slide.
- f. Slide design considerations:
 - i. The slide title can be the overarching question you'll address.

4. The questions you are addressing

- a. What are the specific questions you will answer (or issues you will address) in your talk?
- b. These questions provide the scaffolding for the rest of the talk.
- c. This slide should can introduce each talk section (with the relevant question highlighted).
- d. This slide can end each talk section (with a synopsis of the answer to the question added to the slide).
- e. Slide design considerations:
 - i. The questions, if yes/no, can also be placed next to check boxes that you can check off as you move through the talk.

5. What you did, what you found and what you learned:

- a. Each question defines a section of the talk
- b. For each question:
 - i. Explain enough about what you did that your audience will understand (methods).
 - ii. Show figures presenting your findings.
 - iii. Explain what the figures mean.
 - iv. Present, at the end of the section addressing that question, the answer or resolution.
- c. Slide design considerations:
 - i. Use the slide title to summarize the method, result or discussion point.
 - ii. Only put information on slides that you will explain.
 - iii. Limit the number of plots on any one slide (ideally maximum 4 – 6, but 2 is fine).
 - iv. Include, wherever possible, notations of statistical significance.
 - v. Animate the figures to come up one at a time (control attention).

1. This also helps you remember what you want to say when.
- vi. If you cut and paste figures from a journal article
 1. Enlarge them until the fonts are > 16 point.
 2. Edit them to be separate panels that can be presented one at a time.
- vii. Pay attention to the visual system:
 1. Images with black backgrounds are hard to see on white slides.
 2. Use a background that maximizes contrast with your images / text.
- viii. Use movies only to show dynamic results / illustrations.
 1. Do not loop movies forever while you talk about something else.
 2. If possible, set up videos to play on mouse / pointer click.
- d. Slide presentation considerations:
 - i. For every plot, explain what the axes are, what is being plotted and what it shows.

6. What it all means: synthesis

- a. Following the slide that presents the answer / resolution to the final question present the synthesis.
- b. Provide a high-level summary of what you've learned.
- c. You can also use this slide or slides to talk about future directions.

7. Acknowledgements

- a. Who did the work or helped you do the work?
- b. Who funded it?

Talk preparation, delivery and post-hoc evaluation.

1. Before the talk
 - a. Practice
 - i. If you want the talk to go well, practice it at least a few times before you give it.
 - ii. Practice is particularly critical earlier in one's career before presenting can become more automated.
 - iii. Pay attention to and try hard to remove "Um" and similar filler words.
 - iv. Make sure you can give the talk in the time allocated.
 1. There is no excuse for giving a talk that takes longer to present than the time you are allocated.
 2. If this happens at a conference and you finish the talk, you are making the session run late, which is unfair to the subsequent speaker (and annoying to the audience).
 - b. Get feedback
 - i. If the talk is important (a conference, a job talk, etc.) present it to people and ask for feedback.
 1. Ideally choose people who give good talks.
 2. Your true friends are the ones who will tell you what is wrong with your talk.
 - c. Immediately before the talk
 - i. Arrive with plenty of time to get set up.
 - ii. Check the sound from your laptop if you present things with sounds.
 - iii. Check the lights to make sure your presentation will be visible.
 - iv. Check your microphone to make sure it works and that the level is reasonable.

2. During the talk
 - a. If you are comfortable doing so and it is appropriate, tell people that you are happy to take questions during the talk.
 - i. If you do this, it is your responsibility to manage your time to make sure you get to the key parts of your talk.
 - b. Do not start with an apology.
 - c. Use the pointer but do not wiggle it around constantly (this gives some people headaches).
 - d. If presenting in a room with multiple screens, use the mouse or a fancy pointer that displays on all screens if possible.
 - e. Modulate your voice and pause at times to emphasize points.
 - f. Use your hands for emphasis if you can.
 - g. Monitor your talking speed and work to control / optimize it.
 - h. Pay attention to the time so you can end at or close to the correct time.
 - i. Make eye contact with your audience frequently.
 - j. If you can, try to pay attention to the expressions on the faces in the room.
 - i. This is much easier with practiced talks.
 - ii. Is anyone nodding?
 - iii. Does anyone look confused?
 - iv. How many people are napping?
 1. Particularly at institutions with undergraduates, a few students napping in the room is the norm, so don't take it personally.
 - v. You can also pause and ask explicitly "is everyone following?" or something similar.
 - k. If the talk is recorded / broadcast, repeat all of the questions so that remote viewers know what you are answering.
 - l. When answering questions:
 - i. Make sure you understand what the question is; ask for clarification if necessary.
 - ii. It can be helpful to paraphrase the question in the response.
 - iii. If it is a very good question, feel free to explain why it is a good question in your response; this could help audience members who are less familiar with the topic (and makes the questioner feel good).
 - iv. If you do not know the answer, say so clearly, but feel free to answer a related question or discuss the importance of the question as a future direction if appropriate.
 - v. Answer questions with an appropriate amount of uncertainty; feel free to use phrases like "we think" or "it seems very likely that".
 - vi. If you get an aggressive questioner, or if a question would take too long to answer, feel free to say that perhaps you and she/he should discuss that issue after the talk.
3. After the talk
 - a. Get feedback
 - i. If you are in a friendly environment, ask people whether everything made sense and if there are areas you could improve.
 - ii. Remember that the only way to improve is to figure out what you are doing that is not maximally effective.