Creating Your 20.109 Presentation

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Writing Across the Curriculum

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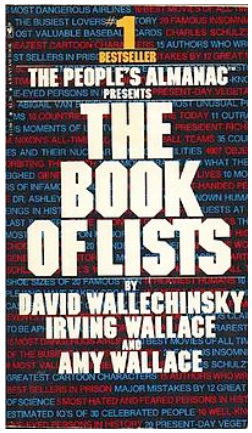
The Book of Lists tells us that public speaking is the #1 human fear



Outline

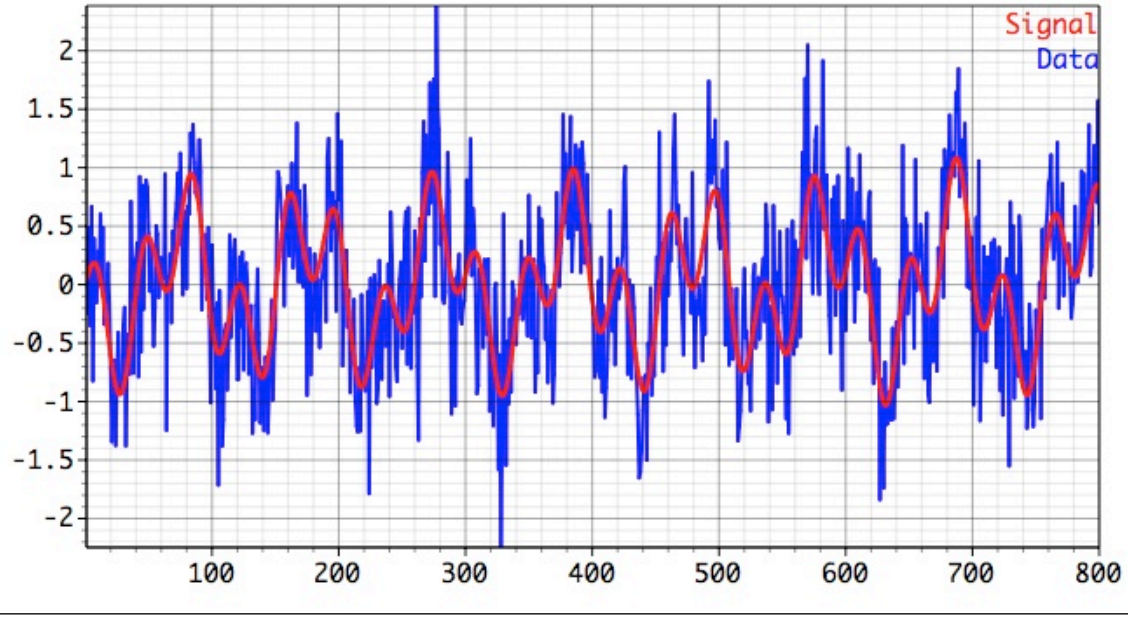
- Some fundamentals of oral communication
- Structuring the journal club presentation
- Principles of effective visual support
- Delivering the presentation

Oral communication has unique constraints

- Challenge for the presenter:
  - Must communicate in “real time”
- Challenge for the audience:
  - Can’t control rate of presentation to match their comprehension
  - Can’t re-read sections

Maximize signal,

minimize noise



Know your material and its message

Content is the key!

- Identify the core idea and why it matters
- Collect *more* information than you will use
- If possible, get a broader context
  - Read a review of paper
  - Read later paper by the same group
- Anticipate problem areas
- Research unfamiliar words, methods, etc.

Know your audience

- Who are they?
- What do they know?
- What might some of them **not** know?
- What do they want to know more about?

A journal club has a distinct audience and purpose

Audience

- Fellow researchers (peers)
- Similar (not identical) technical backgrounds
- Not experts on this particular research project

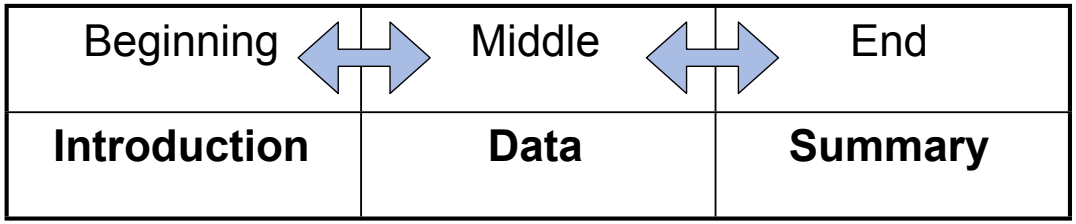
Purpose

- Get acquainted with research project
- Understand research in context
- Consider limitations of research
- Learn how it might apply to future projects, work in 20.109

Ask yourself...

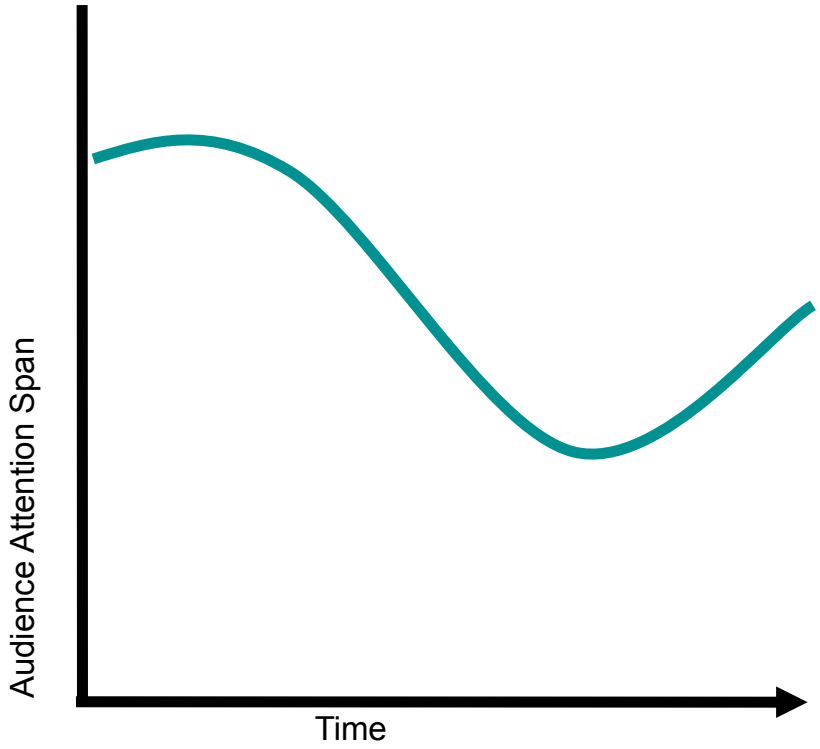
- What is the main point I want to make to my audience?
- Why is this interesting or important?
- How do the data support my main point?
- What part of my story can I tell with the data in the allotted amount of time?

To organize the presentation, tell a story



- Engage the audience's interest as they follow the narrative
- Show how each section relates to and builds upon the one before it

Preview and Review help audience discern structure



- Map out goals of the talk in advance
- Summarize at the end
- Within each section, use topic sentences and recaps

Transitions guide your audience through the logic of the scientific process

http://www.highlandguides.com/winterreports0708.htm

Look forward and backward to *differentiate* and *connect* ideas

- Articulate the motivation for each step of the investigation **before** you explain it
- As you go, explain what questions still remain
- Most important point of an explanation comes first
- Use signal phrasing (“Although...” “As predicted...” “Unexpectedly...”)

Introduction establishes context and problem

- Introduce yourself and your subject
  - Slide should have title, author, journal, pub date
  - Paraphrase your title verbally; no need to recite all authors
- **In one sentence, introduce the central question or problem of the experiment**
- State significance of experiment; why should we care?
- Briefly explain necessary background
- Give audience a preview of approach to problem

Data section works to answer central question

- Forms bulk of presentation
- Drawn from Methods, Results and Discussion of paper
  - keep explanation of methods to a **minimum** -- only as much as needed to understand results
  - integrate discussion as you go

Summary determines what audience remembers

- Recap: what are the primary findings?
- Link back: how have you fulfilled the need established in your Introduction?
- So what? or, how do these these findings contribute to the field?
  - Emphasize the potential interest/utility of findings to your specific audience
  - Where to go from here?

Q & A

- Anticipate questions not covered in the presentation
- OK to bring extra slides
- OK to acknowledge gaps in expertise
  - Explain what you *do* know
- OK to ask questioner to clarify what they are asking
  - Listen; repeat/rephrase

Visuals exist to support your message

Or: Why use slides at all?

Disadvantages:	**Advantages**:
• disruptive -- pull audience's attention away from the speaker and onto the screen	• can convey a point quickly • add variety and interest • audience recall increases dramatically when the speaker uses **effective** slides

Ask yourself: What specific point are you trying to convey with your visual?

Direct the audience's focus

Title all slides

- Headings should clarify the main point (conclusion to be drawn) for each slide

Use graphics liberally, keep them simple

- Average attention span per slide: 8 sec

Use clear, explanatory labels for charts and diagrams

- Make sure to label axes!

Less is More

- Limit number of slides
- Say more than you show
  - show primary points on slide; flesh out secondary points verbally
- Minimize text
  - Don’t crowd your slides with a lot of text. Especially, avoid using complete sentences -- or worse, complete paragraphs. Either the audience will become engrossed in trying to read the text, and will stop paying attention to *you*, or else they’ll wonder why you didn’t just give them a handout already and save yourself the trouble of reading to them.
- Avoid potentially annoying animation
  - Really.

Use color to provide interest and emphasis

- Be easy on the eyes; don't distract from content
- Avoid low-contrast combinations

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Typography should help audience read text quickly

- Choose clear, simple fonts
- Type at least 20-24 pt
- Limit upper-case type
- Be sensitive to spacing and text alignment

FIGURE 01: COMIC SANS, PAPYRUS, IMPACT

http://interactivity.ifactory.com/2011/11/the-case-for-typography/

Use graphics to reinforce your narrative

What story does this picture tell?

"As shown in Fig. 2, the **loss of neuraminidase activity** from the supernatant coincides with the **disappearance of this 66-kDa protein**. This indicates that **neuraminidase activity is precipitated via the 66-kDa protein**."

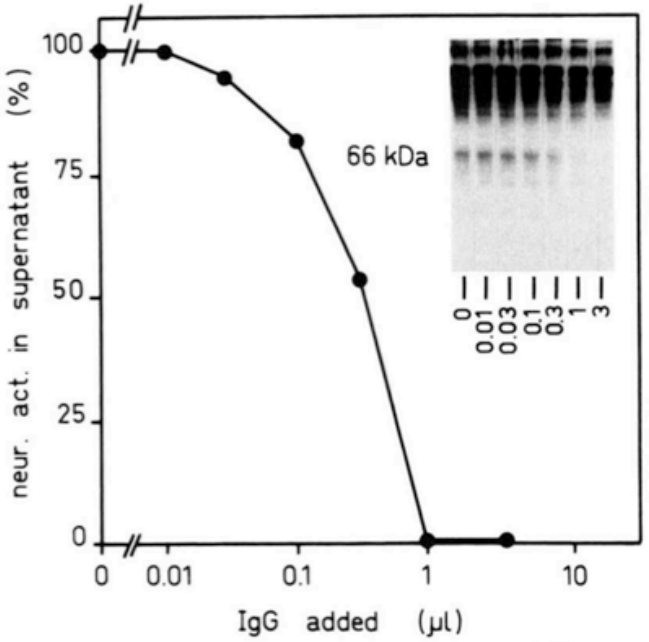
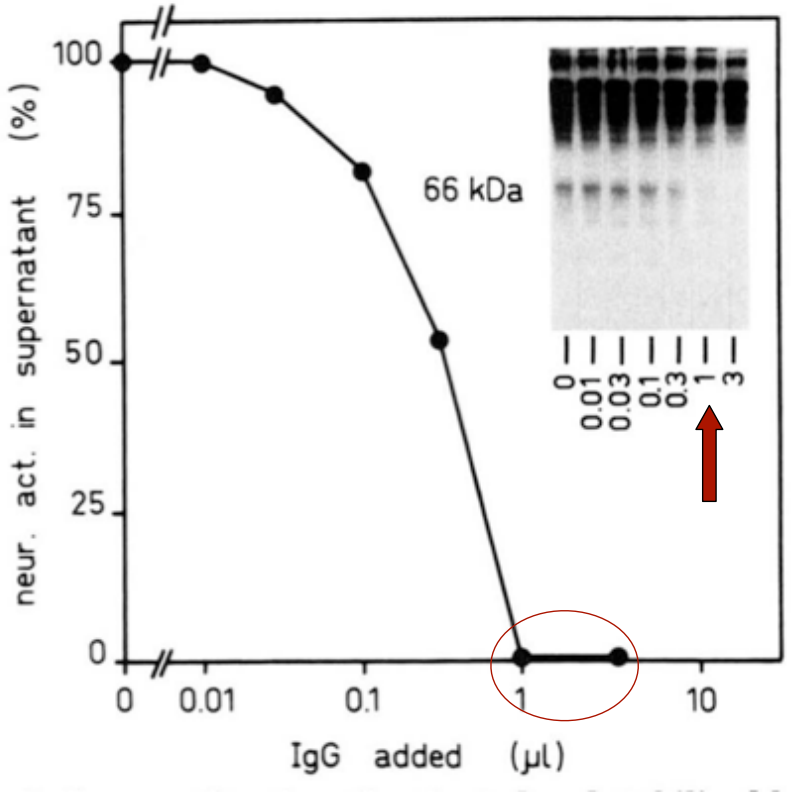


FIG. 2. **Immunotitration of activated and stabilized human placental neuraminidase.** Activated, stabilized neuraminidase was immunoprecipitated from a human glycoprotein preparation with increasing amounts of an IgG preparation prepared from neuraminidase-specific antibodies. Neuraminidase activity was measured in the supernatants. *Inset*, immunoblot analysis of supernatants using neuraminidase-specific antibodies.

From van der Horst GT, Galjart NJ, d'Azzo A, Galjaard H, Verheijen FW. Identification and in vitro reconstitution of lysosomal neuraminidase from human placenta. J Biol Chem. 1989 Jan 15;264(2):1317–1322.

Neuraminidase activity is precipitated via 66-kDa protein

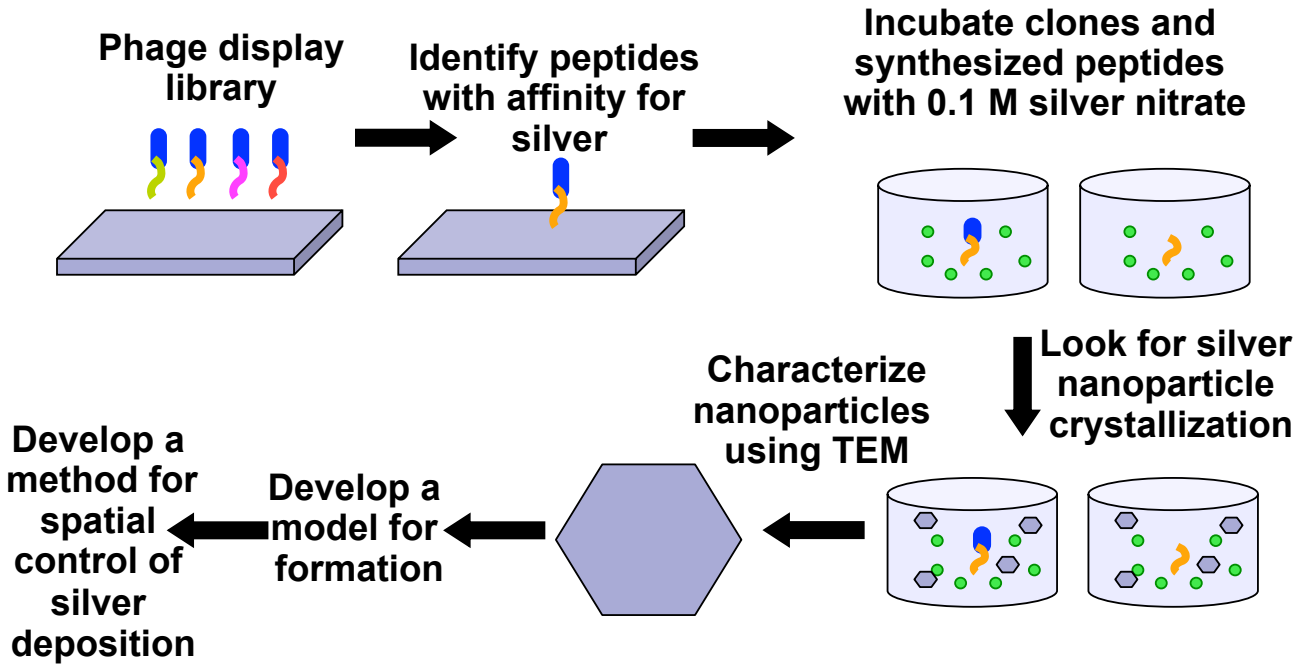


immunoblot analysis of supernatants

Neuraminidase activity ceases with disappearance of 66-kDa!

From van der Horst GT, Galjart NJ, d'Azzo A, Galjaard H, Verheijen FW. Identification and in vitro reconstitution of lysosomal neuraminidase from human placenta. J Biol Chem. 1989 Jan 15;264(2):1317–1322.

Approach: Combinatorial chemistry to find peptides that bind and precipitate silver

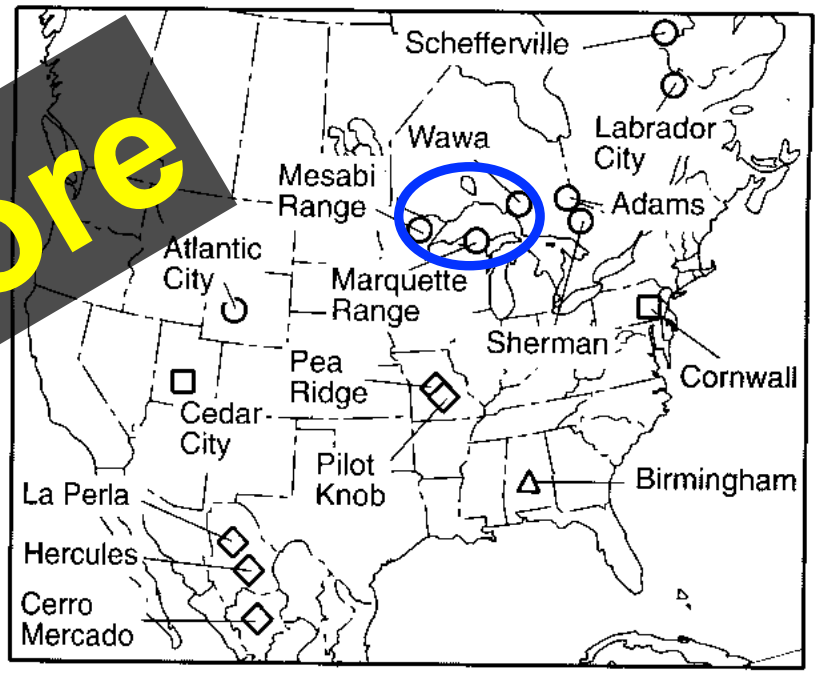


Courtesy of Anna Simon, 20.109 (S08). Naik et al, Biomimetic synthesis and patterning of silver nanoparticles. *Nature Materials* 2002 **1**:169 - 172

Iron

- An abundant metal, makes up 5.6% of earth's crust
- Properties:
  - shaped, sharpened, welded
  - strong, durable
- Accounts for >95% of metals used
- Iron ores discovered in 1844 in Michigan's Upper Peninsula
- Soon found other ores in upper Wisconsin and Minnesota

Iron Ore Distribution

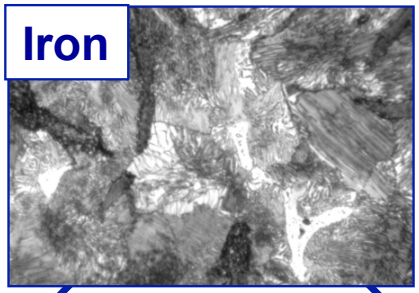


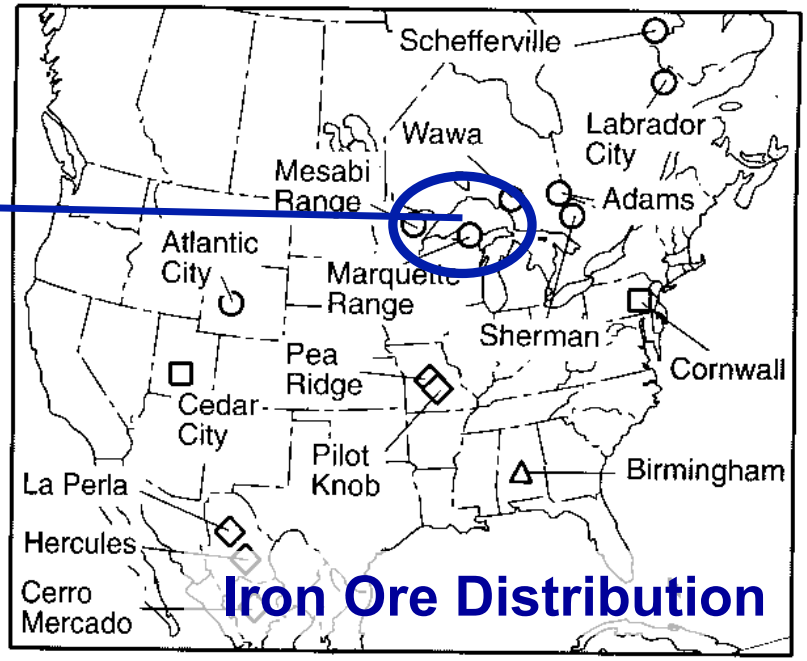
Before

Kesler 1994

Michael Alley et al., "How the Design of Headlines in Presentation Slides Affects Audience Retention," *Technical Communication*, vol. 53, no. 4 (May 2006), pp. 225-234.

Iron ores make up 5.6% of the earth's crust and account for 95% of the metals used





Is strong and durable

Can be shaped, sharpened, and welded

[Kesler 1994]

Alley et al., 2006

Students learning from the transformed slide scored higher on an identical test question

Q: How abundant is iron in the earth's crust?

Iron

- An abundant metal, makes up 5.6% of earth's crust
- Properties:
  - shaped, sharpened, welded
  - strong, durable
- Accounts for >95% of metals used
- Iron ores discovered in 1844 in Michigan's Upper Peninsula
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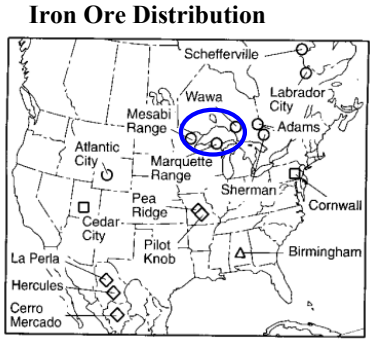
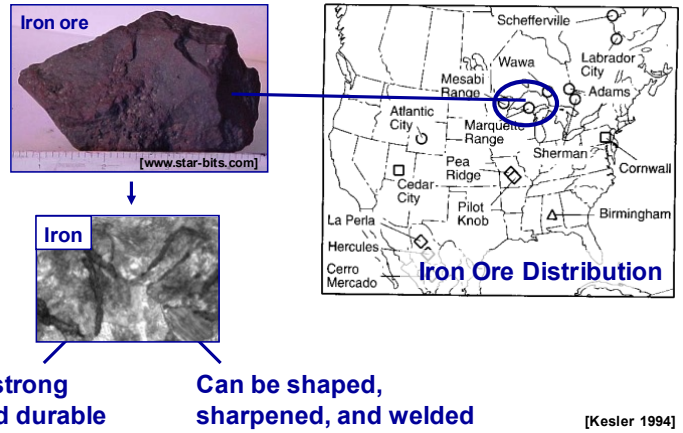


Kesler 1994

Led to 59% recall

Iron ores make up 5.6% of the earth's crust and account for 95% of the metals used



[Kesler 1994]

Led to 77% recall

p<0.001

Alley et al., 2006

The secret of good delivery is rehearsal

- Practice at least 4 times
- Practice with a colleague for feedback
  - Is your content clear?
  - Do you rock, squirm, gesture too much?
  - Is there room for improvements/adjustments?
- Time yourself
- What 3 questions will your audience likely ask?

Connect with your audience

Work to build rapport

- Establish eye contact; look at *people*
- Convey enthusiasm; if you aren't excited about your subject, your audience won't be either
- Explain novel ideas/terms or references
- Use everyday language and terms
- Clarify connections that may be obvious to you but not them

A presentation is *two-way* communication

- Pay attention to audience reaction; modify your talk as needed

Extemporaneous speech is most suitable for informal presentations

	+	-
Reading from written text	Huge safety net	Distances speaker from audience Little flexibility
Memorizing	Freedom from notes Security of knowing exactly what to say	Minor interruption can derail you Artificial/stagey Time-intensive
Extemporizing (w/ rehearsal)	Best connection with audience Most flexibility	Can seem intimidating to novice speakers

Project mastery with your body language

- Make non-verbal behavior deliberate; avoid extraneous motion
- Use gestures that complement your speech's content and are natural for you
- Stand at a 45-degree angle to the audience
- Keep weight evenly dispersed on both feet
- Don't block the screen!

Maximize the signal in the vocal channel

Volume

- Project to back of room: support voice with deep breaths

Rate

- Speak at appropriate rate for audience comprehension
- Slow down for especially complex or important content
- Incorporate strategic pauses

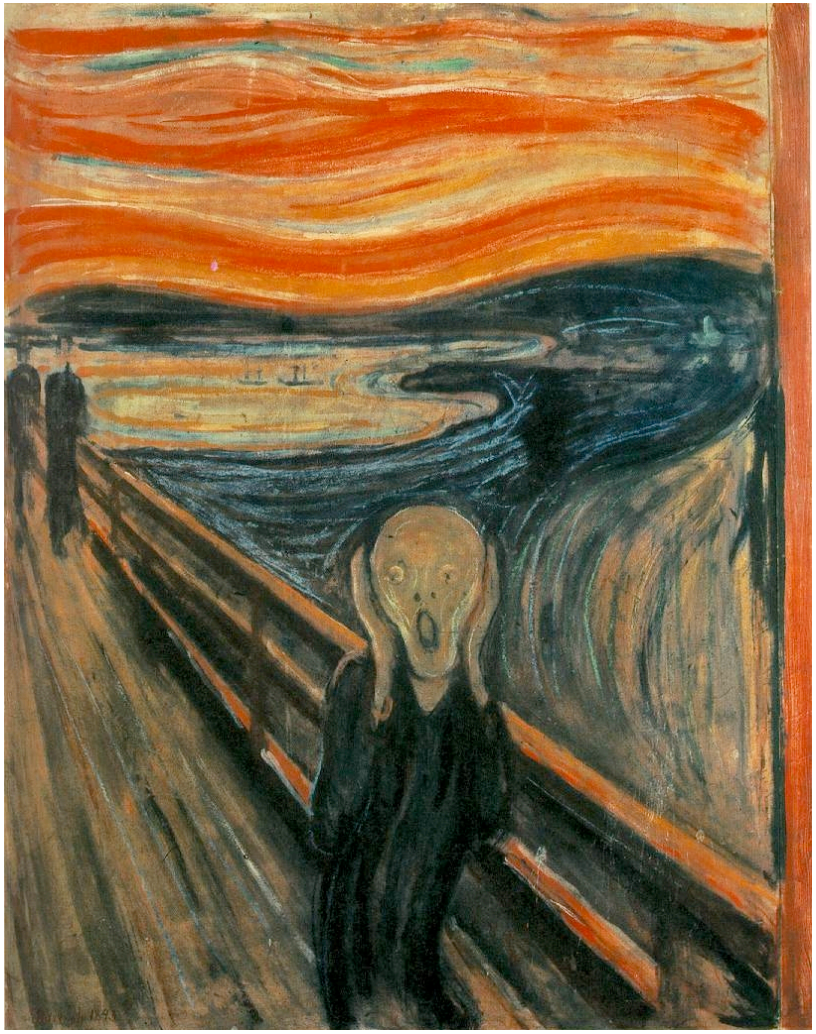
http://www.stevebeyerproductions.com/images/Three%2520Tenors.jpg

Pitch

- Keep pitch of your voice at a natural level
- Avoid “uptalk”

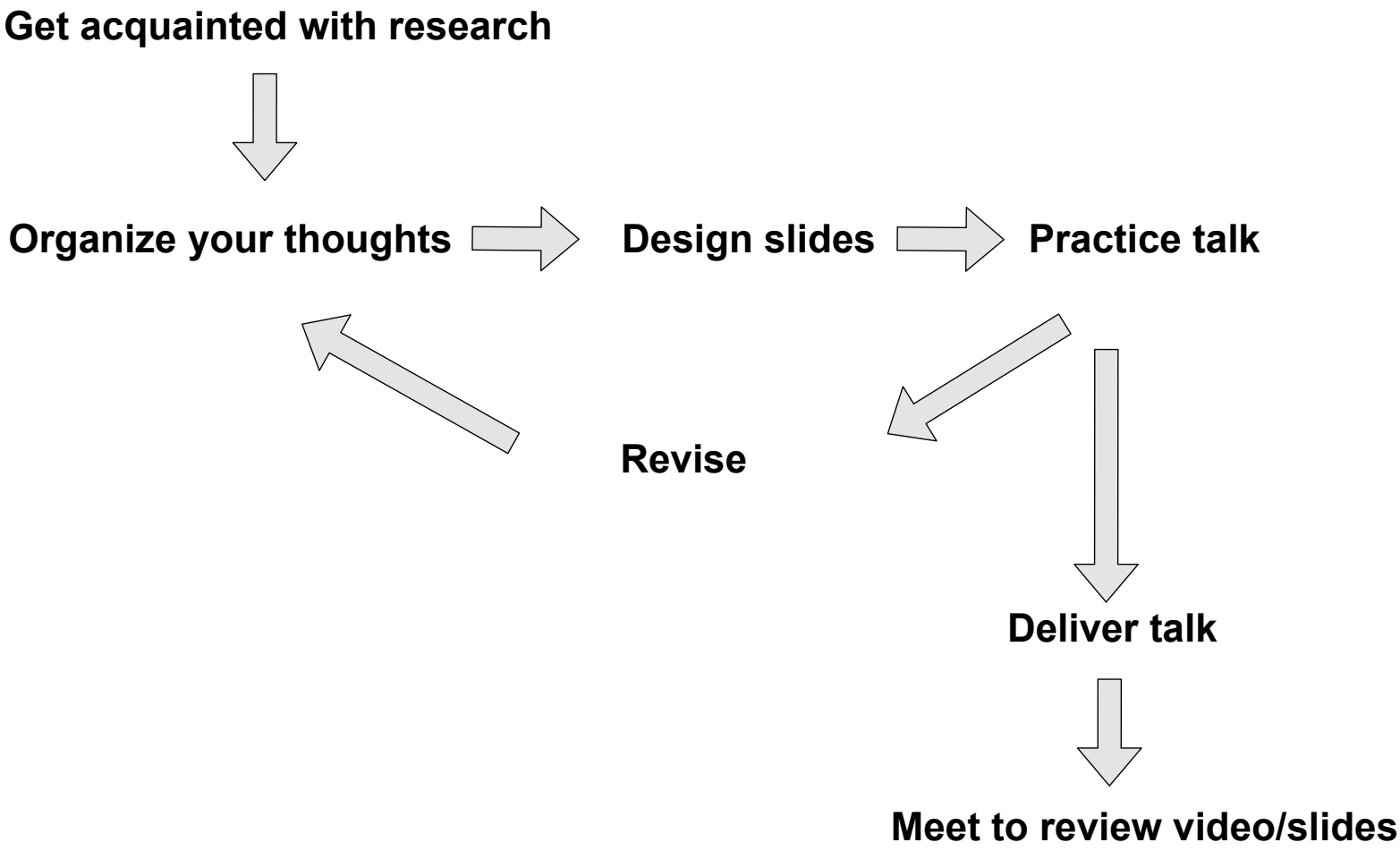
Anxiety is normal, but can be overcome

- Practice and prepare
- Visualize yourself succeeding!
- Focus and center yourself
- Breathe
- Have a conversation



http://upload.wikimedia.org/wikipedia/en/archive/f/f4/20100829163553!The_Scream.jpg

Now What?


Get acquainted with research
Organize your thoughts
Design slides
Practice talk
Revise
Deliver talk
Meet to review video/slides

Sources

Alley, Michael. *The Craft of Scientific Presentations*. New York: Springer, 2005.

Alley, Michael, Madeline Schreiber, Katrina Ramsdell, and John Muffo. “How the Design of Headlines in Presentation Slides Affects Audience Retention,” *Technical Communication*, vol. 53, no. 4 (May 2006), pp. 225-234.

Doumont, Jean-luc. *Trees, maps, and theorems*. Kraainem, Belgium: Principiae, 2008.

Duarte, Nancy. *Slide:ology.* Sebastopol, CA: O’Reilly Media, 2008.

Perelman, Leslie C., Paradis, James, and Barrett, Edward. *The Mayfield Handbook of Technical and Scientific Writing.* Mountain View, CA: Mayfield Publishing, 1998.

- Available to MIT community at https://web.mit.edu/course/ 21/21.guide/www/ home.htm

Tufte, Edward R. *The Visual Display of Quantitative Information*, 2nd ed. Cheshire, CT: Graphics Press, 2001.