The (im)Proper Use of Powerpoint

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In your classroom PowerPoint presentations do you…

- Read from your slide?
- Conduct a “forced march” w/o checking for understanding?
- Use PowerPoint as your sole means of instruction?
- Have students make their own classroom PP presentations without modeling components of a good presentation?
- Ask your students to comment on your PP style on their evaluations?
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OUTLINE

• Common practices in PP
  – Dos and don’ts
  – Critics and advocates (refs)
• Cognitive Issues and PP
• PP, active learning, and learning for the long term
Avoid Science/Nature-style figures (multiple panels)

- Break down multiple figures into single panels, shown sequentially
- Re-label the figures appropriately
- BUT… who has the time to remake slides from scanned figures?
  - Besides, they bear the watermark of authority…
Too Complex

Break complex figure into 3 slides

(From: R. Anholt--"Dazzle ‘em With Style"
Simplicity of Presentation

• Don’t use distracting PP slide templates
• Simplicity and minimalism is conservative, tasteful, and…
• **does not add to cognitive load**
• Stick to one format--uniformly simple
• Go very easy on animations and avoid showy or dramatic ones
Books on Powerpoint

- S.M. Kosslyn: “Clear and to the point” Oxford, 2007
  http://www.edwardtufte.com/tufte/powerpoint
- C. Atkinson: “Beyond Bullet Points” Microsoft, 2005
More Sources

• Caughlin, Janet PowerPoint Workshop for Teachers. Tom Snyder Productions, 2002.
Strengths of PowerPoint

• Color
• Legible
• Visual Aid
• Handouts with Notes
• Animations
• Can Post on the Internet
• Integrates well with other programs
Main Weakness of PP

Unless teachers integrate thinking and engaging activities, it is a high tech lecture that will put their class to sleep.
Cognitive Issues and PP: Memory

• Three kinds of memory
  – Sensory memory: short lasting (few sec) buffer for working memory
  – Working memory: purposeful &I conscious info processing (lasts few to 30 sec?), in hippocampus?, has limited capacity
  – Long term memory: where knowledge is stored, in networks/schemas; two-way flow with working memory.

Think about working memory when making your PP slides
Cognitive Issues and Powerpoint: Cognitive Load

• Cognitive load is related to amount of effort related to learn new knowledge
  – Learning is a constructive process built on what the student already knows
  – Effort is related to the dialog between working memory and long-term memory

• A rule of thumb: “Rule of Five”
  – Exceed five---->cognitive/WM overload
  – Reduce Cog load, get rid of distractors & extraneous info from your slides
For Example

• Extraneous loading
  – Diagrams plus written text, read aloud don’t reinforce, they distract/compete for attention.
  – If students are also taking notes, they are switching their attention from screen to their notes.
  – Helpful hint: *offload* part of the cognitive task to written notes or better, a printed pdf of the PP (“outsourcing” part of the cognitive load)
Cognitive benefits of clicker-checks

• Instant feedback for student comprehension
• Assess students’ preconceptions about the subject (prejudices, biases, misconceptions, attitudes, opinions)
• Participation in complete anonymity
Some advantages of clickers

• Spot-check for comprehension of just-presented material
• Tests for attention to previously assigned reading assignment
• Provides a change-of-pace in the lecture
• Opportunity to lead into a brief class discussion