

## Undergraduate Research Symposium

### Making an Oral Presentation

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PowerPoint or Keynote are the media for formal presentations in most technical and business settings. Using PowerPoint for your oral presentation is not strictly required. It is your likely choice, and the rooms for the oral presentations will be PC-equipped. Bring PC-compatible and PC-tested presentations on flash memory sticks for delivery from classroom installed PCs. If you bring a Mac-please be sure to have the connector.

#### The Script

Before discussing presentation dos and don'ts, step back and reread your submitted abstract. The abstract contains all significant points and is the blueprint of your talk. Develop an oral script and keep it. Your scripted talk should be strong enough to stand alone in the face of multimedia snafus. The script is not part of the visual presentation. Do not begin with an outline of what you will cover. The audience will have read the abstract before deciding to attend. The abstract framed your question, presented data or information to support your study, and discussed the significance of the results.

#### The Presentation Slides

Each presenter will have 13 minutes, of which 10 are for presentation and 3 are for questions. How many slides can you use in a 10-minute presentation? Counting your title slide, never have more slides than you have minutes. Timings are tight and time limits are firm. The next presenter will have 2 minutes to set up.

#### The First Slide

The standard form of your first slide is project title, co-authors (if any), and relevant departmental information. This can be projected as you begin but should not be read to the audience. If you read it to them, they will stop listening to your presentation.

#### Simplicity

- Slide design and layout should be consistent and simple. Beware of fancy colors, backgrounds, and animation schemes as these false steps detract from the presentation.
- Choose a font size and color that can be read easily by the audience (minimum of 18 to 20 pt or look at the slide at 66% magnification to see if you can read it).
- Avoid bullets if possible, and never use more than one caliber. If your slide is so full of words that the audience must stop to read it, they will stop listening to you.
- When presenting graphical or pictorial data, it is the graph or picture that is important. Squeezing a graph or photo onto half the slide and explaining the data in bullet points on the other half of the slide distracts attention from the data and makes the data hard to see. ***The bulleted information should be in your script and the graph in your presentation.***

#### Some Examples

As people from different fields will be making oral presentations, there is no exact formula for a good PowerPoint presentation but we all recognize one when we see one. However, many more presentations are made worse through inappropriate reliance on the mechanics of PowerPoint. A simple Google search for "bad PowerPoint presentations" returns numerous examples. The example below is a single PowerPoint

slide rife with misuses of bullets and other bad practices common in PowerPoint presentations. This one comes from a NASA presentation after the destruction of the Shuttle Columbia during reentry. The slide is within the box with appropriate commentary outside of the box:

On this one Columbia slide, a PowerPoint festival of bureaucratic hyper-rationalism, 6 different levels of hierarchy are used to display, classify, and arrange 11 phrases:

- Level 1 Title of Slide
- Level 2 ● Very Big Bullet
- Level 3 – big dash
- Level 4 • medium-small diamond
- Level 5 ◦ tiny square bullet
- Level 6 ( ) parentheses ending level 5

The analysis begins with the dreaded Executive Summary, with a conclusion presented as a headline: "Test Data Indicates Conservatism for Tile Penetration." This turns out to be unmerited reassurance. Executives, at least those who don't want to get fooled, had better read far beyond the title.

The "conservatism" concerns the *choice of models* used to predict damage. But why, after 112 flights, are foam-debris models being calibrated during a crisis? How can "conservatism" be inferred from a loose comparison of a spreadsheet model and some thin data? Divergent evidence means divergent evidence, not inferential security. Claims of analytic "conservatism" should be viewed with skepticism by presentation consumers. Such claims are often a rhetorical tactic that substitutes verbal fudge factors for quantitative assessments.

As the bullet points march on, the seemingly reassuring headline fades away. Lower-level bullets at the end of the slide undermine the executive summary. This third-level point notes that "Flight condition [that is, the debris hit on the Columbia] is significantly outside of test database." How far outside? The final bullet will tell us.

This fourth-level bullet concluding the slide reports that the debris hitting the Columbia is estimated to be 1920/3 = 640 times larger than data used in the tests of the model! The correct headline should be "Review of Test Data Indicates Irrelevance of Two Models." This is a powerful conclusion, indicating that pre-launch safety standards no longer hold. The original optimistic headline has been eviscerated by the lower-level bullets.

Note how close readings can help consumers of presentations evaluate the presenter's reasoning and credibility.

The Very-Big-Bullet phrase fragment does not seem to make sense. No other VBB's appear in the rest of the slide, so this VBB is not necessary.

Spray On Foam Insulation, a fragment of which caused the hole in the wing

A model to estimate damage to the tiles protecting flat surfaces of the wing

### Review of Test Data Indicates Conservatism for Tile Penetration

- The existing SOFI on tile test data used to create Crater was reviewed along with STS-87 Southwest Research data
  - Crater overpredicted penetration of tile coating **significantly**
    - Initial penetration to described by normal velocity
      - Varies with volume/mass of projectile (e.g., 200ft/sec for 3cu. In)
    - **Significant energy is required for the softer SOFI particle to penetrate the relatively hard tile coating**
      - Test results do show that it is possible at sufficient mass and velocity
    - **Conversely, once tile is penetrated SOFI can cause significant damage**
      - Minor variations in total energy (above penetration level) can cause **significant** tile damage
  - Flight condition is **significantly** outside of test database
    - Volume of ramp is 1920cu in vs 3 cu in for test

Here "ramp" refers to foam debris (from the bipod ramp) that hit Columbia. Instead of the cryptic "Volume of ramp," say "estimated volume of foam debris that hit the wing." Such clarifying phrases, which may help upper level executives understand what is going on, are too long to fit on low-resolution bullet outline formats. PP demands the shorthand of acronyms, phrase fragments, and clipped jargon in order to get at least some information into the tight format.

### Slide Reference:

[Edward Tufte – PowerPoint Does Rocket Science – and Better Techniques for Technical Reports](#)

### Other Resources:

- [Tips for creating and delivering an effective presentation](#)
- [Top Ten Slide Tips](#)
- [Top Tips for Effective Presentations](#)