Guide to making a good presentation

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The tl;dr version:

Pictures! No paragraphs! No reading from the slide! Labels! Big font!

The longer explanation:

Why not to write out your talk on your slide:

First of all, if you can't give your talk without reading from your slides, ***you aren't ready!*** What does this mean? It means you need to know the material inside and out, and be able to tell the audience about it as if you were just having a conversation (while facing them instead of the screen). Use notes to keep yourself on track, but don't write your notes on your slides.

Secondly, if your whole talk is written out on your slides, what is your role as the speaker? Either you read to the audience, which is boring, or you say different something different from what they are trying to read on the slide, which is distracting.

The power of pictures:

The main advantage to using slides over simply giving a speech is that you can show images. The best talks are spontaneous explanations of ***pictures*** you show your audience.

Make the picture big! Don't waste valuable slide real estate with a written explanation of the image – it detracts from the power of the image and your ability to tell the story.

Make the labels short and legible. Most of the audience will be a lot farther away from the screen than you are. If your label has to wrap around to the next line, reconsider its length.

If you have a complicated experimental design, draw a diagram and walk your audience through it. Harness the power of PowerPoint to bring one element up at a time, as you get to it in your explanation.

Use only enough text to make your image understandable:

Short, well-placed, easy-to-read labels make an image comprehensible.

Short, title-like phrases are sufficient to help the audience follow your reasoning.

Avoid taking up a huge portion of your slide with a not-so-specific word like "RESULTS".

The detailed figure titles necessary in print are completely inappropriate in a presentation – the audience can't read it and listen to you at the same time.

Make it big enough to read from the back of the room:

Project your slide, walk to the back of the room, and check legibility. If you can't do a trial projection, maximize the image on your computer screen and step back from it about 6 feet.

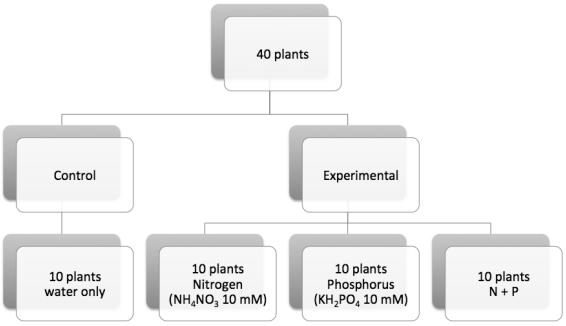
Compare the following pairs of slides:

The left slide in each pair has too small a picture (or none at all) and too much text. The slides on the right, however, contain an image large enough to be seen from a distance, and the text (including headings) enhances audience understanding of the experiment.

EXPERIMENTAL DESIGN

- We obtained 40 plants, all at the early seedling stage, where the cotyledons were first visible above the soil.
- We used 10 of these as controls. They got only water.
- 30 plants were experimental plants. 10 of these got nitrogen supplementation in their water (as NH_4NO_3 – ammonium nitrate – at a concentration of 10 mM).
- Another 10 got phosphorus supplementation in their water (as potassium phosphate monobasic- KH_2PO_4 – at a concentration of 10 mM).
- The last 10 got nitrogen *and* potassium supplementation.
- We harvested all the plants (the above-ground structures) when they were 20 days old, ground them to a powder in liquid nitrogen, and then weighed that powder to get the dry weight in grams.
- We recorded the weight of each plant, and calculated the averages and standard deviations, and ran a t-test.

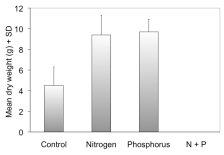
Fertilizer Experiment



Harvest at 20 days, freeze dry, weigh

RESULTS:

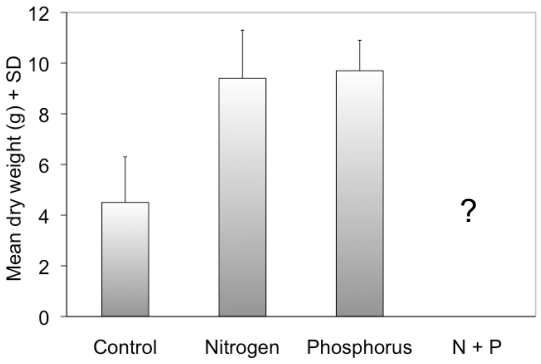
As can be seen from this graph of the results of our experiment with fertilizer, the addition of phosphorus or nitrogen to the potting soil increased the growth of the plants at least two-fold. The control plants were statistically smaller ($p < 0.02$) than the treated ones, as measured by dry weight.



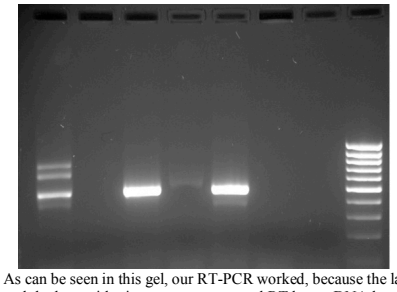
This agrees with our hypothesis. We expected an effect at least this big, based on the results reported in several papers (Brown & Green, 2001, Farmer & Cook, 2009, Gardner & Chamber, 1999).

Unfortunately, we were unable to test the simultaneous application of nitrogen and phosphorus due to a growth chamber mix-up. We would have predicted, based on the same papers, that such an application would have produced even greater increases in plant dry weight.

Fertilizer increases plant growth



RT-PCR



Lane 1: gDNA; Lane 2: Control -RT; Lane 3: Control + RT; Lane 4: Experimental (Nitrogen) -RT; Lane 5: Experimental (IAA) + RT; Lane 6: Experimental (Phosphorus) +RT; Lane 7 Experimental (Phosphorus) -RT; Lane 8: Fermentas MassRuler, LMW

As can be seen in this gel, our RT-PCR worked, because the lanes without RT have no bands, and the lane with nitrogen treatment and RT have cDNA bands. We did not get an RT band for the phosphorus treated plants. Also, there is approximately the same amount of cDNA in the two RT lanes, showing that our nitrogen treatment did not increase or decrease the amount of gene expression. This is a surprise, because we designed this experiment based on several papers that suggested an effect of nitrogen on the expression of our gene (Brown & Green, 2001, Farmer & Cook, 2009, Gardner & Chamber, 1999).

N does not affect gene expression