

How to Construct An Effective Presentation

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Mary-Anne Courtney, Ph.D.

University of Rochester School of Medicine and Dentistry

Department of Microbiology and Immunology

What you should be able to do after this presentation.

1. *State the differences between a written and oral presentation of your work.*
2. *Outline the first steps you should make when preparing a presentation.*
3. *Be able to see the forest for the trees ie state the big picture, give a framework, or explain how your work will save the world.*
4. *State MAD MAC's rules for good slides.*

The most important thing about a presentation is the presenter. The presenter should be the focal point of the presentation. Yes you have slides or other audiovisual aids but that is what they are aids. Remember if the electricity fails you should still be able to give the presentation. You know from your own experience that the presenter can greatly influence your final impression of a seminar. This may be a scary thought but following a few suggestions can allow anyone to make a good presentation that with practice can become a great presentation.

It is important to remember what a presentation can and cannot do and how it differs from a written presentation of your work. You must acknowledge that in a presentation your audience's attention will wander and lag – this has nothing to do with you or the presentation but rather the reality of the human attention span. Therefore, you cannot expect your audience to assimilate more than five major points. Also know that these points must be made more than once to assure that the whole audience will understand your message. It can also be argued that making these points from different angles will also ensure greater understanding by your audience.

An abstract at the beginning of a paper allows a reader to appreciate rapidly what the paper seeks to demonstrate or prove. An effective speaker will spend a couple of minutes letting the audience know what the talk is about and an outline of how the talk will proceed. This can be done orally or with a slide (more about what this slide should and shouldn't be later).

In a paper a materials and methods section is provided so that the experiments presented could be repeated in another laboratory. In a presentation you want the audience to understand the basic design of your experiments. At the least a flow chart should be used to outline the procedure. A slide with diagrams and pictures can go a long way to giving your audience a clear picture of your experiments

Authors use tables and figures to show their results which are stated and discussed in detail. Tables and figures presented in a paper can have a level of detail that does not work for a presentation. A reader can refer to the text, make notes on the figure and spend as much time as necessary to understand and be persuaded or unconvinced of your

conclusions. In a presentation you must make your slides digestible in the brief time – maybe only 30 seconds to a minute that your slide will be before the audience. It may be considered impressive to use the tables or figures that have been published in your papers but it is probably not the most effective way to present the information. Tables and figures should be presented in a clear and concise manner with all aspects clearly labeled and a title that states the conclusion drawn from the results.

Rather than a written discussion a speaker must find a way to clearly state and present the major points they wish to make. The careful use of artfully crafted slides can do much to make your points persuasive.

Now that we have explored the basic difference between an oral presentation and a paper its time to get down to what you should do to design a knock them dead presentation for any situation. The first thing you should do is establish the Why, Who, What, and Where of this particular presentation.

You need to tailor your presentation to match the why you are making the presentation, to whom you are making the presentation, and where you are making the presentation.

Why are you making this presentation? Make sure you have a clear idea of what you are trying to accomplish with your presentation.

Who is your audience - fellow scientists – fellow microbiologists -- fellow *E. coli* geneticists? The amount of background you will need to present will be guided by the knowledge you can be sure your audience will have. But it is better to err on the side of more background.

What are you going to present? What are the major points you wish to make? What is the best way to get these points across? One good plan is to consider each point as a unit. You can create units or cassettes that can stand alone, that you can modify for the audience, and your can continue to use them as your story grows.

One can follow the following outline to construct these building blocks. Start with the hypothesis or question you are addressing, follow with an experimental design slide, show raw data in the form of figures, condense the results into a table or graph, and finally end with a conclusion.

The final consideration is the Where which includes the audiovisual equipment you will have at your disposal. The size of the room will impact the way your slides will have to be. A large room which will require a high level of magnification may take that wonderful figure and wash it out. Make sure you have checked your slides in a similar sized room. Always have a backup – overheads for example – and if worse comes to worse can you give your talk without slides? The new technology is wonderful but it also provides many points for failure of equipment and incompatibility – make every effort to check this out before you reach the time of the presentation.

Now we come to the meat of the matter setting up your presentation. First, you want a title that will bring people to your talk but you don't want to promise what you can't deliver. Your title which will be influenced by your audience here is an example of how a title could be modified for your audience.

One title: Expression of Genes Coding for GerA and GerK Spore Germination Receptors Is Dependent on the Protein Phosphatase PrpE

I would suggest that this title would be appropriate for a meeting of researchers in the area – that is *Bacillus* spore investigators. Better titles might include.

Protein Phosphatase Regulates the Expression of Spore Germination Receptors in *Bacillus subtilis*. This would work for microbiologists.

The Regulation of Spore Germination in *Bacillus subtilis*. This would work for biologists.

What Controls the Change from Resistant Spore to Growing Cell in Bacteria. I would suggest this last one could work for a wider audience yet.

Now that you have a title you need to plan how you will use those first few precious minutes when you have most of the audiences attention. You should let the audience know what you are going to tell them. Tell them where you are going to start – where you are going – where you will end up. You can do this orally or with a slide. But if you use a slide make it concise. Don't for example

1. Introduction
2. Background about A
3. Hypothesis I
4. Experimental Design I
5. Conclusion I
6. Experimental Design II
7. Conclusion II
8. Future Work
9. Acknowledgements

The next major thing you must do is let your audience know why this work is important. You must explain where your work fits in the general framework of biology. Make sure your audience can see the forest for the trees. Your work may be about one reaction in a particular cell of a fern but you must explain how this reaction affects the whole forest. Start with the forest and close in on the fern and then the cell and then the reaction.

If you are working to clarify or expand a model you may wish to show it as it was when you started the work and then use the same diagram at the end of your talk with the additions made possible by your work.

Next you must set up the cassettes of your experiments as discussed earlier. These cassettes will be made up of **ONE** the hypothesis or question, **TWO** a slide with the experimental design. A flow chart can be helpful but being a visual learner I prefer pictures. You should only need 4 or 5 pictures to show the basis for the experiment. A mouse being injected for example – label the kind of mouse and what's in the injection – the mouse being sacrificed – the procedures you use to analyze what you got from the mouse like an ELISA. Now it's a question of style as to whether you will have the whole design appear at once or if you will make the sections appear as you discuss them.

Next you want to present your data which is part **THREE** of the cassette. If you are doing many Northern blots, RT-PCR's, or in situ hybridizations show an example or two of this raw data. Do not show gel after gel rather show a table or figure that summarizes your work giving you part **FOUR**. Part **FIVE** is your conclusion.

Make up as many cassettes as you will need. As you can see you can also use these when you write papers. From each cassette parts three through four could be a result section in a paper. Parts one and five could be in the introduction and/or discussion.

Finally we move on to MAD MAC's rules for good slides.

Rule 1:

Use sans serif type – that's clean type like Arial, or Geneva

Rule 2:

Use upper and lower case.

Rule 3:

Make sure the type is large enough to see in the size room you will use.

Rule 4:

Colors that look good on your screen will frequently look washed out or unreadable on a screen. You can't go wrong with black on white or white or yellow on blue – but make sure the blue works.

Rule 5:

The 1-6-6 Rule. No more than one point per slide. No more than 6 lines per slide. No more than 6 words per line.

Rule 6:

The title of any data slide should be the conclusion reached from the presented material.

Rule 7:

Use the format that matches the material you are presenting. Use a table for exact values, a graph to show relationships, a figure for a picture, and a chart for a process or sequence.

Rule 8:

Powerpoint is a great manipulator of slides but forget the templates, forget the charts, the tables that you can get from using their templates. They are too small. When you make a slide use the blank one and make sure your figure or chart takes up the slide. White space is wasted space on a slide.

Rule 9:

Label everything.

Rule 10:

Check each slide in a similar room with similar equipment and check each slide with an audience – make sure it says to folks what you want it to say.

Rule 11:

It will probably take you two revisions to design the most effective slide.

Now you are almost done. All you have left to do is practice, practice, practice and to prepare for questions and answers. When asked a question – repeat it so the whole audience knows what the question is and to make sure you are answering the correct question.

Final words about presentations

Be enthusiastic.

Keep to allotted time.

Use summary slides throughout.

Allow time for questions.

Let the audience learn.