

There are many ways to prepare a nice presentation, but some general guidelines can help.

First of all, the speech/talk is prepared and then the slides are prepared to support –visually- what you are saying, NOT the opposite.

This is the most important message.

To progress through your talk smoothly, **the logical connections should be identified in advance and planned.** This is the key for a nice presentation. Eliminate everything that distracts from the main logical path, everything should be connected on the basis of the flow of what you say. To have a strong logic use logical connections like *therefore, indeed, however, instead, but, surprisingly, to start with, to verify this hypothesis, finally, to confirm the observation* etc.

Write down the logic of the presentation before starting to create the slides.

Keep in mind that those who listen either listen or read -> minimize the written text or read it
Keep in mind that those who listen do not have time to look at what is on the slide if you do not guide him through it (therefore avoid putting too much data on a single slide)

Practical suggestions for creating slides 1/3:

Structure: The structure of the slides should be consistent, with title, figures, references, technical details, key sentences always in the same position: in this way the audience knows where to find the information (see template). Remember to have a proper opening and closing slide, these are the slides that the audience sees for a longer time, it's good to have a nice image on these slides.

Background: It has to allow enough contrast. Completely white (recommended as a starting point) or extremely light or completely dark/black (requires a lot of extra-effort, not recommended to start) are fine. If appropriate, you can keep the logo of the uni or group in a corner. It's good to leave a little bit of space on all the sides of the slide, because sometimes projectors may cut some margins of the slide.

Title: The title answers to the question: what are we talking about. You can imagine somebody who wakes up in the middle of the talk and has to understand what the current topic is.

Images: Start to build your presentation with one graphical content per slide. If necessary, use maximum 2 or 3 images/graphs/schemes/reaction mechanisms per slide. If you really have to use an image with a background that is different from that of the slide you can always remove the background. Another option is to use a little bit of fading along the borders to reduce the contrast.

The audience wants to feel special, and a tailor-made presentation conveys this message: avoid all the copy-paste from other sources, or at least perform a minimum of post-processing (e.g. remove letters from article figures, add a bit of fading)

Font: choose a font that is easily readable for all types of content, for a start see e.g. <https://doi.org/10.1021/acs.chemmater.6b00306> *Chem. Mater.* 2016, 28, 3, 689-690

Practical suggestions for creating slides 2/3:

Graphs: All graphs must be visible and clear, including their axes (all having the quantity and the unit of measurement). **Basically all of them have to purposely made, it is recommended to have a (or many) template file in Origin, Sigmaplot, Excel with the correct settings** (e.g. thick axes, large numbers etc.) and then always use it, in this way you can avoid to re-choose and optimize the settings every time. **The same is true for chemdraw images.** If in a graph there are many lines, it is good to make the lines appear one by one as you describe them. Instead of having a legend, include a small image of the corresponding sample (with the same color).

Tables: Avoid them as much as possible. Often you can replace a table with a bar graphs or similar. If you really want to have a table, use maximum 5 or 6 entries and make them appear and comment them one-by one or so.

Sentences: It is very useful to write the key concepts/information.

Keep in mind that the audience either listens to you, or reads, therefore a good balance is to read everything that you have on the slide

Use maximum one or two sentences. Choose a font easy to read (not every font is suitable, you can find a lot of info on google)

Technical details: Include the technical details if there is a reason, i.e. if they help a technical reader to think

e.g. typically, the solvent is useful most of the times, the volume of additions typically not, T if different from r.T.

e.g. or, if many parameters have been optimized and you want to convey the idea that there were many parameters to optimize

Practical suggestions for creating slides 3/3:

References: A review can be useful if the concept is general.

A reference is necessary if you show data of a certain paper.

A reference can be used also if you want to support something that is a bit debatable or uncommon.

Be consistent in which authors you write. Having the last/leading author is useful, because the audience can relate to the group that did the study. Having the first is also nice and useful. All authors are usually too much, you can have a few (always the same number) authors and then write et al.

Animations: Animations without a reason should be avoided. Animation are needed to help the audience focus on the right content at the right time and NOT to entertain.

Fading (appearing or disappearing) are typically fine; semi-transparency are fine highlight are also useful, smooth transitions from white to black backgrounds can be useful (e.g. if in a white-background presentation a black video is displayed)

Rotations or entry on the side/top/bottom are most of the times inappropriate.

Slide numbers: They are useful because – when present – people asking questions can refer easily to a specific slide, and this makes it easier to navigate the presentation. However many people do not refer to slide numbers even when present, and in this case they are useless, so that's up to you.

Suggestions for the delivery 1/2:

This depends very much from each person. To find your own path, take advantages of the additional resources and try.

It is very useful (and strongly recommended) to write down the speech at least once. This allows to understand which points are critical.

Learning the first 1 or two sentences by heart helps a lot, because in this way you can start without problems.

Learning the whole speech by heart can be useful if you have issues with English or if it helps (for short talks especially). Often if it's not completely by heart it looks more natural. But often to look natural you have to practice a lot, so don't forget to practice.

Some people rehearse 1-2 times, some people many, but rehearse.

Decide in advance when to use the pointer. Keep it close/attached to your body to avoid shaking.

To end the talk over the planned time is very bad. Ending it in advance is less problematic (but of course using e.g. only 60% of the time is not good).

Practice the timing in advance. Personally, I like to keep it a bit shorter, because if I have to add something unplanned then I am not worried to end later, and in this way I can also speak in a more relaxed way.

Suggestions for the delivery 2/2:

Try to look at your audience, eye contact can enhance the quality of the talk. You can also identify some «rocks» in the audience: people that you know are supportive and/or interested, but please avoid to look only at them.

If you experience problems: stay focused and do your best, do not complain; if you're doing good keep going but keep the focus!

Questions and answers:

The person who is asking wants to know more about your project/topic.

Do not feel attacked, acknowledge the limitations of your work if the questions points at a weakness. Provide them with solid information based on data.

Listen carefully to the question, let him/her finish the question, then **answer briefly** to the question, and **then add some more info**, based on scientific evidence or a small comment explaining the short answer in more detail, if appropriate.

Examples

Q1: Have you tried to do the synthesis adding some acid?

A1.1: **No, we did not try to do the synthesis adding some acid.** It's a good suggestion, thanks

A1.2: **No, we did not try to do the synthesis adding some acid.** In acidic condition the reaction should not work because [..], therefore we didn't try.

A1.3: **Yes, we tried.** Unfortunately it did not work, likely because [..]

Q2: What is the hydrodynamic radius of your vesicle?

A2.1: **The hydrodynamic radius of this vesicles is 40 nm, measured by DLS.** This size is consistent with the observations performed with TEM.

A2.2: **The hydrodynamic radius of this vesicles results to be 40 nm when measured by DLS.** This size is strongly dependent from sample preparation, indeed in other experiments dimensions between 10 and 100 nm have also been observed.

It looks very bad when you look overconfident/not basing the discussion on experimental evidence, and also when you speak without answering the question, so practice and avoid such behaviors.

Checklist:

All the titles/sentences/images are **aligned**

Font and dimensions of the text are consistent throughout the presentation

The **style of the references** etc. is consistent

The **style of Capital Letters and** use of **dots** should be consistent.

Remove all possible **acronyms**

Units of measurement are present and adequate

Graph axes are readable and uniform. Lines and points on graphs are thick enough.

Chemical **formulas and molecules** are readable and consistent.

All the elements, including **text** have sufficient **contrast** (e.g. no light blue over dark blue); one suggestion to check this is to print the presentation in a scale of gray: you should be able to see everything clearly.

Images are of sufficient quality (no too pixelated images). No image is just copy-pasted from papers if not required.

The **slides are not overcrowded**. (1-2 maximum 3 elements usually are ok) In case, divide the slide in more slides, eliminate content.

On the day of the presentation:

Check the flow of the slides, especially the connection between each pair of slides.

Be aware that mac and windows (Linux!) may not be compatible and very problematic.

Check all the slides on the projector that will be used as soon as possible, to avoid problems, have a pdf version (works on everything) or ask to use your laptop.

In case, be careful on the type of connection of your laptop with the projector: HDMI or DVI

Additional resources/1

This is not a comprehensive document and should not be taken as a perfect source of information. You're encouraged to look online and learn more.

Some useful resources/things to do:

Look at YouTube tutorials/videos: some example

- Creating effective slides: Design, Construction, and Use in Science – di Jean-Luc Doumont, he is a professional, he has also a dedicated website with some interesting material.
- Susan McConnell (Stanford): Designing effective scientific presentations
- www.visualizeyourscience.com has some good resources and some content is free

Read: some examples

Craig Hawcker, Editorial: Effective Presentations—A Must. *Angew. Chem. Int. Ed.* 52, 14, 2013.
A PhD is not enough – book, one chapter is on presentations, but actually it's a good read.

Look analytically at good speakers, i.e. when you like a part of a presentation ask yourself «why am I liking it?». Before going to a conference ask who is a good speaker

It's important to master to a decent level some programs: Chemdraw (for chemical structures); Origin or SigmaPlot or Excel (for graphs); Gimp or Inkscape or Photoshop (for 2D image processing); Avogadro or Blender (for 3D images, including chemical structures). There are numerous online tutorials and manuals, learn to learn from them, it's an important transferable skill! Advice: look for videos of a few minutes, and patiently follow them step-by-step, do not hurry up. Read manuals slowly, understanding each part, do not hurry up to solve immediately the issue you are experiencing. In this way you learn something for sure, otherwise you might just lose your time scrolling the document and not understanding anything.

Additional resources/2

Nature Methods had a column on data visualization for years, discussing several different aspects. You can have a look at it here

<http://blogs.nature.com/methagora/2013/07/data-visualization-points-of-view.html>

Advanced issues to consider 1/2:

For the intro, consider the following structure, if appropriate:

Why we do something – the vision behind what we do (the broad context)

How we try to comply to the vision

What we have done – practically – to implement this vision

Example:

Why – to solve the energetic issue of the world

How – developing new carbon nanomaterials

What I have done – I synthesized redox-active carbon dots

Every piece of information should be motivated: why is it necessary?

If you have something difficult to understand, either explain it slowly and clearly or remove it

If some data do not help the logic development remove them, even if it was a lot of work to produce them

If you have the chance to make an unplanned joke or to say something clearly unplanned, you may look very comfortable, but be aware that sometimes it does not work or the audience will react in a bad way. Do not exaggerate! Remember that we are in a professional context.

Obviously avoid any political, ethnical or sexual comment – consider these categories in the most inclusive way, including the views that are most different from yours. Remember that in public occasion you also represent the group and the University, therefore avoid any controversial thing. If you are a master student or a PhD, likely it makes a better impression if you avoid jokes.

Advanced issues to consider 2/2:

What message do I want to convey? What should the audience think while I present? At the end of the talk? And after one week?

- They (*the speaker*) work in a nice way, very solid science (then I show all the control experiments etc.)
- They have original ideas (I build the logic/story to make it original)
- I liked the presentation (I build a very enjoyable logic/story, with nice graphics)
- They have put his work in context (I provide a broad outlook)
- They are grateful (I acknowledge coworkers and mentors)
- They work a lot (I add a lot of data)
- They got the cover (I put the cover on a single slide)
- They have worked with cool people (I put a slide with mentors/institutions and pictures)
- They taught me something/I learned something (I will be very didactic, starting from the very basics – often very nice, we like to learn)
- They (*the speaker*) want to test a paper close to submission, I have to be ready to take some criticism, to have a stronger paper
- I have a specific target e.g. because I want to collaborate (I mention it explicitly and prepare the presentation at the level of that person)

Think about where the audience is looking when you speak (e.g. for this reason, let the curves of a graph appear one by one)

Think about what the audience thinks (e.g. bla bla, this does not work.. [here the audience expects a solution, so provide it], therefore we decided to..)