

## The Art of Presenting - Help Sheet

Marcel Padilla

Last edit: November 2020. Newest version available on my website.

These notes form a quick guide on all the aspects to consider when holding an academic presentation. I recommend closely following this guide during the design, process, and preparation of a presentation.

The main focus will be on the two books that have helped me a lot:

- *A PhD Is Not Enough! A Guide to Survival in Science*. Peter Feibelman
- *The Craft of Scientific Presentations. Critical steps to succeed and critical steps to avoid*. Michael Alley

Note 1: There is no unique correct way to hold a presentation. Everything comes down to opinion and changes over time. However, reading these notes will help you to become aware of many details and will also help you to develop your own opinion on a good presentation.

Note 2: Do not ever think “*my topic is less suitable for presentations than others*”. That is simply not true.

## The Importance of Presentation Skills

- **Information Transfer:** It is your chance to teach other people unique topics. Often people will show up who otherwise would never have read your publications. Hook them up and teach them a lesson. A better presentation will have your audience remember more and make you more credible, follow worthy.
- **Attention:** You will probably not receive this much attention at once in other situations. People give you their valuable time. Reward them with something good in return for which they will remember you.
- **Personal Exchange:** Your audience will learn about you personally and your research, which is incredibly important for collaborations. A good presentation draws people you can work with to you or teaches them that you are a good researcher. They might then follow what you do in the future too. You should see presentations as an opportunity for many new paths.
- **Transferrable skills:** Being a good public performer also transfers to academic writing and conversation skills.

## Your Goal

- **To Tell a Story:** A good presentation tells a memorable story of your research. Your job is to design a storyline that gently takes the audience through a motivating journey through its core ideas. This story does not actually have to reflect your research history. You cannot possibly show your entire research. Don't even think about doing that.
- **To Be Remembered:** A good presentation is a memorable presentation. To achieve this, you need to capture your audience's attention as firmly as possible through an excellent performance. If done well, even the non-expert in your audience will believe to have understood what you have done, even if the details would take weeks to fully comprehend. In this case they will remember you and what they learned.
- **To Be Believed:** The right delivery will earn your trust from your audience. Even though you often have to exclude finer details, a good delivery usually weighs up for it. By being credible to the audience even experts won't question if there is a flaw. They will believe that you did the right thing, and that they will be able to figure out the details easily.
- **To Promote Yourself:** Not only are you presenting your topic, but also yourself as a researcher. Presentations are a gateway to personal exchanges and followers.

## Story Design

The most important part of your presentation design. This is the content selection together with the order and the transitions between the key ideas.

- **Showtime:** A presentation is a show and you are the show master. Grab your audience's, get them attached, surprise them. Good information should also be entertaining similarly to a theater play or a movie. There has to be a coherent introduction to gain a big picture and the plot has to be well connected.
- **Empathy:** Take the audience by the hand and guide them through the complicated topic without them losing sight of the big picture. Remember that your topic is not as simple as it seems to you now after investing months into it.

**Storyline:** Before working out the details make sure to have designed the plot. Think modular, in terms of ideas connected by transitions.

- **Introduction:** This is where you establish the big picture. Your introduction should make clear what the content of the presentation is, why it is important, what the main problem is and what you want to do about the problem or what you have come up with. Take your time when designing this because without a solid introduction, the rest of the presentation won't stand a chance.
  - **Piece of Advice #1:** Telling people what they already know can be very satisfying for them. If it is their topic, they love to hear that it is important. If it is not their topic, a recap is really helpful.
  - **Piece of Advice #2:** Make use of a table of contents only if the presentation is long. Ideally your introduction should make clear where things are going.
- **Main Content:** Design an order and a theme in which the story is told without losing sight of the big picture. The most natural/pleasing way to order your content should make transitioning from one key idea to the next easy. Here are some ideas that can be combined.
  - **Algorithm Based:** Any algorithm comes with multiple ordered steps for a good reason. After establishing what the algorithm should do, you could take the audience through these steps. Example: *Problem statement, input data, pre-processing, assumptions, step 1, step 2, evaluation.*
  - **Theory Based:** Focus on the theoretical problem statement and establish a more detailed picture of the problem with new insights. You should usually start from the simplest concept and work your way up to the hard parts.
  - **Problem Based:** Look at the problem and directly speak about reasons for the problems and ways to fix it. Example: *Improving previous algorithms or historical hard problems.*
  - **Parallel Picture:** Develop two pictures (or more) at once or one after the other. Use a familiar picture together with your new picture to justify each step. Example: *smooth theory and its discrete analogs.*
  - **Get Creative:** There are many more ways to structure this part.
- **Conclusion:** Bring back the big picture from your introduction and show what has changed. Make this a strong take-home-message that your audience remembers whenever they think about this topic again.
  - **Piece of Advice:** Your last slide/image will hang around during the question session. Don't let this valuable piece of real estate go to waste with a "thank you" only slide or a list of references. Put your conclusion with a nice picture on it too.

**Story-telling methods:** Don't just throw around rough theory at you audience. Cut it up into digestible pieces and deliver them on a silver plate. Here are a few ways you can deliver information.

- **History:** If possible, establishing historical context of your subject and problem statement helps to give it importance. Refer to other people who have worked on it to use their authority. Be careful to keep this part short but impactful.
- **Analogies:** Explain ideas using a comparison to something familiar. Example: *Comparing the size of a proton and an electron to something in our scale.*
- **References:** If you give a notion to a numerical quantity that is difficult to relate to, give other examples or statistics with which the audience can be more familiar with that help them sense the greater context. For example: *That is enough energy to power the United States for 1 year.*
- **Example Second:** Linking theoretical statements to something concrete really helps one feel connected to the subject. Example: *this*. Example 2: *Introduce some theory, then show where it applies.*
- **Example First:** Show an example first, then transition to the theory using the example. Example: *Show a phenomenon, then collect mathematical terms for a formula to describe this phenomenon.*
- **Extra Advice for Mathematics:** Work with carefully crafted interpretations of mathematical formulas and relations. If you don't do this, you will probably instantly lose most of your audience at the math parts. Examples:
  - If you minimize some quantity, talk about minimizing an *energy*.
  - Use words like *forces, penalties, rotations, rescaling, projections or regularization* to describe terms inside a formula according to their mathematical interpretation.
  - If terms show up in other phenomena, call them out. Terms behaving like diffusion, pressure, advection, current etc.
  - If a term is just super mysterious, try explaining or showing what happens if it is missing using examples.

**Levels of Depths:** Cover them all.

- **Introduction:** This should always be non-technical. It should satisfy everyone.
- **Main Content:** When transitioning to a new idea you should always begin at a low level and then work your way up to the specialist level. When the next idea begins you should reset back to a low level.
- **Conclusion:** Avoid the specialist level here too. Nothing complicated should be introduced here. Combine the Introduction with the main content.
- **Note:** It is ok to lose people in the audience for short amounts of time when at the specialist level. Just make sure that you don't dwell there too long. Help the audience by using story-telling methods.

## Visual Design

Visuals are what people can hold on to while hearing you. Make sure that the visuals support your speech and try empathizing with the audience when looking at your visuals. As a general rule: your audience cannot multitask much and has to be fed information bit-by-bit reinforced with visuals and speech.

**Projected Slides:** This is currently the most common method for talks and what we will focus on here.

- **Text Style:** Use Helvetica if possible. Never use a serif type font. Make it large. Don't mix up fonts unless you want to highlight things like quotes or code. Never CAPITALIZE words because they are harder to recognize from their shape. Left-align all text unless it has an obvious reason to be centered. To emphasize, use italic or bold letters instead.
- **Spelling:** Please check your spelling. This can be a major distraction.

- **Space Management:** Be generous with white space as it is pleasing to the viewer. Too much visual information at once can be intimidating/overwhelming. A slide should never contain more than 7 “point/ideas”. Split slides if the information content is too heavy.
- **Order:** Every slide should have an obvious order at which to look at its content. If the order is not clear, use highlights or make objects appear piece by piece.
- **Text:** Be sparse with text. Reading sentences is complicated and will reduce the audience’s ability to listen. Stick to short texts or just words in bullet point format. Sentences should never have more than two lines (except quotes). If they are longer, you must have the intention to read them out as they show up.
- **Images:** Use many! Images keep the viewer focused on the topic and can express so much more (and different) things that speech and text cannot. Have at least one image per slide. Formulas should often be treated as images.
- **Videos:** These really take a lot of attention from the audience. If the video is complex or has audio you must prepare your audience and not speak too much during the playback. If the video is simple you may emphasize events in the video using speech.
- **Demonstrations:** Any experiment on stage with or without the audience has to be rehearsed before. They can be very rewarding but are also very risky.
- **Passing around:** Passing a model of something around the audience can be done if the audience is small. This can really wake people up. Only pass things around after you have introduced them.
- **Headline:** Each slide should have a short headline that coins down the purpose of the slide. Left adjust it for easier reading.
- **Slide Animations:** Be very careful about them. Use them if they really emphasize the transition or points you are making. They can also stab you in the back when you have to go back some slides for some reason.
- **Colors:** Make sure everything is readable with high contrast. Have a color scheme that you stick to during your whole presentation. Make sure that your chosen colors are comfortable when projected, have something to do with the topic or represent the institute.
- **Combine:** Nothing on the slide should be unmentioned. Including the words on the slides in your speech reinforces your audience’s memory of that word.
- **Extra Advice for Mathematics:** Formulas are important to show but be careful that they don’t steal the show.
  - **Don’t let them read:** Complicated formulas contain a lot of information and could be chewed on for hours. This is dangerous because your audience might start doing that and not listen to you anymore. Use story-telling methods to frame terms inside formulas according to their mathematical interpretation only. Highlight terms so that the audience does not chew too deep into them.

**Blackboard or live digital writing:** The classic blackboard-style works for small scale presentations and can be really useful for information that requires time to transmit. For example, mathematical theorems and proofs.

- **Prepare:** Draw out your boards on paper before. You may copy them during the presentation. Do this to use the entire space wisely and to order your thoughts.
- **Size:** Please write large enough for the audience to read depending on the room size or get familiar with the digital writing equipment first.
- **Look:** Face your audience/camera as often as possible, also when pointing at things on the blackboard.

## Delivery

This part is not about the content but about the style with which you present your content. To be convincing is probably the most important thing you can work on with delivery techniques.

- **Confidence:** This is incredibly important. Having low confidence in yourself or your research can undermine your public performance. How confident you are can really be noticed in your voice, stance, gestures, focus. Nervousness is absolutely normal in presentation situations. Rehearsals and imagining success can help to release some stress. A sports team that enters a match, confident that they will win, often plays better.
- **Humor Warning:** Don't *try* it. If it is not your natural humor, then it is most likely out of place. Be careful to have established credibility before and don't risk confusion.
- **Attitude:** Be yourself. Don't be a talking machine. Use your character to give the presentation a natural personal touch.
- **Passion:** Your performance should convince people that you really enjoy your topic. This will earn you a lot of credibility too.
- **Voice:** This is your communication tool. Wield it well.
  - **Volume:** Adapt to the room you are in. Speak loudly and be consistent with it. Losing volume in complicated parts will make your audience lose trust in you.
  - **Speed:** Be consistent with it in order to stay trustworthy. Don't be too fast, ever.
  - **Pace:** The audience has limited multi-tasking abilities. If you show a video, for example, it is ok to shut up. Don't bring in high-level ideas when a lot is going on visually.
- **Body:** Body language is important whether you like it or not.
  - **Neutral Position:** Keep your hands at your side or in front of you and stand with your legs slightly apart parallel to the audience. This feels a bit unnatural but for the audience this looks good.
  - **Eye Contact:** If the audience is too big, target each area of the room. If the audience is small, try to establish eye contact with the people. It really wakes people up and makes them focus, in parts because of "*audience guilt*". Use their facial expressions as feedback to maybe throw in another sentence.
  - **Hands:** Use arms and hand motions to emphasize what you are trying to describe. Pretend you are holding something, turning it, breaking something apart, etc. depending on what you are describing. Use open hands instead of pointing fingers.
  - **Stance:** Don't walk too much. Maybe step forward to emphasize a point. Never lean against a table, don't fold your arms and keep your hands out of your pockets. Don't block the view to whatever you are showing and make sure that you face the audience as often as possible.
- **Webcam Presentation:** Take control of the image you give.
  - **Setup:** Place the camera above eye-level (don't look down). Make camera-eye contact every once and a while. Keep at least an arm length distance from the camera. Test your microphone placement and be in a quiet environment without a mess in the background.
  - **Light:** Make sure to have soft illumination from the front. Ensure that the background is not too bright.
  - **Position:** Show your hands. If possible, use a stand-up setup.
  - **Screensharing:** Clean your desktop from any distractions. Especially notifications.
  - **Connection:** Do your best to ensure a stable connection.
- **Question Session:** You might get under crossfire here. Keep cool at all times. Having established credibility really makes this part easier.
  - **Prep:** Some questions can be expected, for example, if you skipped a detail or basic application questions. Always have answers ready for those.

- **Notes:** Scribble notes in front of you about the question. This will also help you to listen better.
- **Repeat:** If a question was not obviously understood by everyone, repeat it before answering. Many people appreciate this, and it gives you more time to think.
- **Mercy:** Always be kind and unoffended by whatever comments you receive also during the presentation. Keep some authority in your voice though and maintain your credibility.
- **Evasion:** Sometimes questions are stupid or too hard to answer.
  - Give some words and then use something like *“We can take this discussion offline after the presentation”*. This is also good if you have an answer that is not short.
  - Promise to look this up in the future or that this is part of future investigation.
  - If applicable, kindly hint that the question exceeds the scope of this investigation.
  - If the question is out of this world, it is ok to say that you don't know the answer.
- **Stay in Topic:** If a question opens a debate to something completely different you don't have to enter it, especially if you don't have the expertise of that area.
- **Mental Preparation:** Take this seriously too. Arrive early, speak to people, meditate, eat, whatever helps you relax. Also pay no attention to people leaving or looking at their phones.
- **Tools:** Laser pointers or sticks, only use them if you are 100% sure that they enhance the experience. For example, if you have images with high amounts of detail and you want them to focus on certain objects.

## Responsibility

Don't just wrap up a presentation the night before and show up with faith that everything will work out. Take control of your fate!

- **Start Early:** A lot of ideas develop during the design process. The earlier you start the better you can incorporate these ideas. Starting early also means that you will be less nervous and have more time for rehearsals.
- **Murphy's Law:** *“What can go wrong, will go wrong at the worst possible time”*. Check the technical equipment available yourself. Check if required hardware and software is available early enough. Are the videos compatible? Does the font render? Do you have a video with audio and if so, does the volume work well? Even if the error is not your fault, it is your presentation that suffers.
- **Arrive Early:** Be at the presentation location before the session and check for Murphy's law. Use the time to relax and get in the mood.

**Time Management:** Please take your time (literally) to check this. A good presentation can become annoying if time is disrespected.

- **Timed Rehearsals:** Note down how long sections took you. Write down time stamps for the presentation to know if you are too fast or too slow during the live performance. Time feels relative for the speaker.
- **Fill the Given Time Slot:** Make sure that your presentation is neither too long nor too short.
- **Write Generously, Edit Harshly:** During the design of your presentation write down all your ideas. In the end you can then start cutting and merging your story together. This will help you to hit the time frame.
- **Necessity:** Check again and again if the audience *needs* or *cares* about this information. Do this especially when your presentation is too long.

- **No Personal Attachment to Sections:** Have you created a cool animation and can't wait to show it off, but your colleagues are telling you that this part should be skipped? Learn to let go, even if it hurts (like many things in life).

## Preparation

- **Analyze:** Take a recording of a talk that you really enjoyed and dissect its structure using these notes. Feel free to copy that structure yourself.
- **Rehearse:** Speak to other people about your topic and your storyline. Try to convince them that your research is important. Rehearse in front of people and gather their opinions also to build up confidence.
- **Speech:** There are several ways to prepare. Mix and match what suits you best.
  - **Memorizing:** It takes a lot of time and is really difficult to pull off when nervous. Be careful though, without enough training your speech will sound really machine-like, unnatural. You might want to use this with a lot of training for your introduction.
  - **Reading Out Loud:** Avoid this except if you are using a quote or you really didn't have time to prepare.
  - **Points:** Write down key words and then free-style your sentences for each. This will come across more natural if you have become familiar with your topic.
  - **Free:** The most natural and the riskiest way of speaking off the hook. Do this if you feel really confident or in personal conversations.
- **Video recording:** This is still a very new format. Take in all the hints from the Webcam presentation delivery section.
  - **Editing:** Don't underestimate editing work. This won't save you rehearsal time. Be sure to make the final cut appear as one flow.
  - **Humanity:** Keep some human element in the recording. Maybe a video of you speaking at the beginning, or an appearance in the corner.

## Extra Notes

- **Clear End:** Make it really obvious when the audience can begin to clap. Make sure that your conclusion is the last part of your talk.
- **Acknowledgements:** Include acknowledgements with logos at least but don't spend any time on them if you have no time. Depending on the context you can mention them as a way to show that you are good at getting funding.
- **Connector words:** Now, then, thus, however, therefore, whence, hence, even and & but. Try to avoid them for transitions or at least try to avoid using the same connector again and again.
- **Interruptions:** Maintain your posture and reply with kindness. If asked to speak louder do it without hesitation. If confronted with a mistake answer shortly or thank them for the hint. Avoid a debate as gracefully as you can as this is not the time for debates.
- **Dress code:** Wear what you want but consider wearing something that fits the colors of your color scheme.
- **Pronouns:** Be aware of your use of *he* & *she*. For instance, don't use *he* in a storyline that has no established character. Be respectful about these assumptions.
- **Learn your software:** Presentation software to create and present comes with many features. Spend some time learning these features to make the design process more efficient. Learn how to deal with animations and videos in a compatible way on other machines.

- **Presentation mode:** Some presentation software allows you to take notes. When connected to another screen, you can see your notes on your screen while the audience sees the slides only. This presentation mode also allows you to directly jump to different slides rather than having to click through all slides to get there.

*Good luck!*

Please report spelling and grammar mistakes to my email on my website.