

# Talking about your research

# Introduction

- Very important skill
  - Talk every chance you get
- Way outside my comfort zone
  - Rely on advice from the experts

## Speaker notes

Being able to talk about your research is an important skill. This includes both talks at formal research conferences and local seminars. Talk every chance you get. You want everyone you know to be aware of what you are doing, and you never can predict where help for your work will come from next.

I give pretty good talks. I won several area and regional Toastmasters contests, for example. One of my talks in 1997 won an award at a research conference. But I could do a lot better.

Let me share what I know, but I want to back this up with advice from the real experts.

# Ben Stein movie scene



"Anyone, anyone" teacher from Ferris Bueller's Day Off

YouTube video clip of Ben Stein

## Speaker notes

I almost never use negative examples, but this one is an exception. Ben Stein has a small role in the movie “Ferris Bueller’s Day Off.” He plays an Economics teacher who gives an exaggeratedly boring lecture about tariffs. There are several things he does that you should not do when you give a talk.

You can find this video clip on YouTube, <https://www.youtube.com/watch?v=uhiCFdWeQfA>

# “How to Give a Great Talk” Nic Fleming, Nature 2018 (1/6)



Expert presenters share advice on how to capture and hold the attention of a conference crowd.

BY NIC FLEMING

**I**t was horrific,” says Eileen Courtney. “I was just a bundle of nerves. I would die to eat for the whole of the previous day. That’s when I realised I needed to get over my fear of public speaking.”

Courtney is a third-year PhD candidate studying interactions between metals and two-dimensional semiconducting materials at the University of Liverpool, in the Republic of Ireland. Her current project of interest is the controllable patterning her research at the Microscience Microscopy Congress in Manchester, United Kingdom, in July 2017.

The gut-punch feeling of dread that the prospect of being on stage can trigger will be

familiar to many early-career scientists. It could be induced by an invitation to an international conference, an academic group meeting or a public engagement event. Or it might be caused by an all-important presentation as part of an interview process.

## YOU HAVE TO THINK ABOUT THE LEAST KNOWLEDGEABLE PERSON IN YOUR AUDIENCE.

Although the audiences and goals of a talk may differ, the skills and techniques required to pull it off are similar. So what differentiates

a good presentation from a bad one? How can you stay calm in front of the lectern? And is being able to engage an audience really all that important?

The answer to that last question is an emphatic yes, says Susan McConnell, a neurobiologist at Stanford University, in California, who has been giving talks on giving talks for more than a decade. “The whole point of doing science is to be able to communicate it to other people outside,” she says. “Whether it is to close colleagues, colleagues outside of a general field or in our area or to non-scientists, clarity of communication is essential.”

Not all researchers recognise the value of taking time out of the lab to tell colleagues about their work. “Some have this idea that

SOURCE: NATURE EVENTS GUIDE

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First page of Fleming article

## Speaker notes

Here's some great advice from Nic Fleming, published in Nature in 2018.

# “How to Give a Great Talk” Nic Fleming, Nature 2018 (2/6)

- Use vivid words to paint a picture
  - delightful
  - disturbing
  - puzzling

## Speaker notes

Almost every researcher that I have met has a passion. The passions are different from one another, and sometimes they conflict. But the passion is what you are trying to convey. If something about your work makes you smile, use words like “delightful.” If something makes you angry, use words like “disturbing.” If something is difficult for you to understand use words like “puzzling.”

# “How to Give a Great Talk” Nic Fleming, Nature 2018 (3/6)

- Use vocal variety
  - Volume
  - Pitch
  - Tone

## Speaker notes

Notice how Ben Stein talks in a monotone. It could be worse, but he sticks with the same volume, only has slight variations in pitch, and Different parts of your talk need different voices. Use a louder volume (carefully) to build excitement or to convey a need for action. Use a softer volume when you want to draw your audience in. Use a higher pitch when raising questions and a lower pitch when making forceful statements.

Use a higher pitch to raise questions. "Why do we have such poor health care in the United States?" Use a lower pitch to convey concern. "There's a serious problem with health care today."

What is tone exactly. The best example is a phrase that almost every child has heard from their mother: "Don't talk to me in that tone of voice." Tone is the emotion behind your voice. The mother was noting anger or contempt in the voice of the child. Unless you are a natural actor, you will have difficulty with tone. But make an effort. Think about the emotion you want to convey: happiness, anger, or curiosity. Use not just your words, but your tone to help create that mood. You don't have to be perfect at this, and any effort to convey emotion in the tone of your voice will help tremendously.

# “How to Give a Great Talk” Nic Fleming, Nature 2018 (4/6)

- Insert small pauses
  - Gets your audience to think
  - Create emphasis
  - Allows your message to sink in.
  - Creates tension

## Speaker notes

Another very important tip is to insert pauses. Pauses often get your audience to think. This is especially helpful after questions. Notice how Ben Stein never gave his students a chance to answer any of his questions. He used the same pace throughout the lecture.

Pauses ... can ... emphasize ... certain ... points.

Just from a practical perspective, an occasional pause allows people to process what you just said. You don't want to throw too much information at them all at once, and a brief pause from time to time can really help.

Pauses are also useful at times to create tension. Stop talking and people start wondering what you are going to say next. That's a trick that job interviewers use. They'll ask a negative question like "What's your greatest weakness?" You might have an answer ready that shows that you are human without illustrating anything too negative. But watch out. The smart interviewer will pause after your first answer. The silence will make you nervous. Do I need to mention a second weakness? Don't fall for this. Toss in a second weakness and maybe a third to fill in the awkward space. All of a sudden, you've admitted to things that you should never have done in a job interview.

Silence in a talk can work the same way. It creates tension and unease. There are times when you can use this to your advantage. For example, you are talking about ethical conduct of research. Say something like "All researchers have flirted with unethical behavior." Then stop. People will start to squirm and feel uncomfortable. Don't pause forever, but once you've provided this level of discomfort, use it to emphasize why rules of conduct for research are so important.

# “How to Give a Great Talk” Nic Fleming, Nature 2018 (5/6)

- Rehearse
  - Prepare, practice, and perfect.
  - Get feedback
  - Practice in an environment similar to your talk

## Speaker notes

Dr. Fleming offers advice throughout the paper about practice. Speak through your talk not to the point of total memorization, but to the point at which you don't find yourself making awkward pauses. Ask your colleagues to listen to you practice and get their feedback. Also practice in a setting similar to the environment that you will give your talk in. If your speech is in front of a podium, find a podium somewhere to practice. If you will be talking as part of a panel seated along a table, practice your talk while you are sitting.

The biggest advantage of practicing is that it tends to minimize the natural sense of nervousness that we all feel.

# “How to Give a Great Talk” Nic Fleming, Nature 2018 (6/6)

- Ensure you are within the time limit
  - Plan on fixed amount of time per slide
    - This gives a rough estimate on your slide count.
  - Time every rehearsal
    - Cut relentlessly, if needed
    - Develop a rhythm to help with timing
  - Give yourself a margin of error

## Speaker notes

The worst sin you can commit in scientific presentations is going over your allotted time limit. The audience will hate you for it, because they have a busy conference and don't want your talk to interfere with their schedule.

But there's another problem with long talks. Every other speaker in your session will hate you with an unbridled passion if you take too long. You are cheating them out of their time just so you can get more attention for your topic.

First budget a certain amount of time for each slide. It may be 30 seconds to 2 minutes, but do a rough calculation so that you don't have too many slides. If your rough calculation is off, cut back on the number of slides. But don't do this by combining two slides together.

Second, you will never know how long it takes to speak about your topic until you rehearse. Keep time while you rehearse. If you are way off with the first rehearsal, cut out major sections of your talk. Be relentless about this. Better to leave your audience wanting more than irritating them by giving them more than they asked for.

If your first rehearsal is close, see if a second or third practice will cut things a bit. Normally, practice will give you a good rhythm and that can help make things fit better in your time limit.

Don't stop rehearsing until you have your talk a bit under the time limit. Give yourself a margin of error. Nervousness in front of an actual audience could draw things out a bit longer than your rehearsals. Also expect a bit of lost time during the transition from one speaker to another.

If you end up finishing a bit early, the other speakers will love you for it. Never feel bad about failing to fill out every allotted minute you have been given.

# Preparing your slides

- Variety of programs
  - Microsoft PowerPoint
  - Adobe pdf
  - Apple Keynote
  - Prezi
  - reveal.js

## Speaker notes

I speak about slide presentations as if Microsoft PowerPoint were the only program out there that can produce slide presentations. It's not and here are some alternatives.

I don't want to list advantages and disadvantages to these alternatives. In general, they all have their own quirks, but they are all still professional grade quality products.

# “Points of View. PowerPoint in the Classroom” (1/5)

Cell Biology Education  
Vol. 3, 155–161, Fall 2004

## *Points of View*

### PowerPoint in the Classroom

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#### *Note from the Editors*

*Points of View (POV) addresses issues faced within life science education. Cell Biology Education has launched the POV feature to present two or more opinions published in tandem on a common topic. We consider POVs to be "Op-Ed" pieces designed to*

#### **PowerPoint in the Classroom, Is it Really Necessary?**

Diana Voss  
Instructional Computing  
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Stony Brook, NY 11794-3800

H ave you ever asked your students how they feel when their professors bring up a PowerPoint presentation in class? For the past 3 yr, I have taught “Effective Presentation” workshops for students at SUNY at Stony Brook. During the workshops, I ask the students, “Do your professors use PowerPoint?” Based on their responses, it appears that a majority of teachers use PowerPoint. When I ask, “Does PowerPoint improve your ability to learn?”, they feel the same way about the use of this tool in their classroom as I do.

Students feel ignored in lecture halls when the instructor is focusing on the presentation and not paying attention to the class. Part of the problem is limited technology. If the faculty member does not have a remote mouse, he or she may not be able to leave the podium because of the need to click on

## Speaker notes

This is an article in Cell Biology Education in 2004 that I like because it offers a range of perspectives.

# “Points of View. PowerPoint in the Classroom” (2/5)

Power Point Don'ts

- Don't read your presentation to your audience, it is safe to assume that they can read unless you are working with small children. Even if you were working with small children, you are probably better off showing images than a lot of text.

Example of a bad PowerPoint slide

## Speaker notes

Here's a bad slide. Let me read it to you.

"Don't read your presentation to your audience. It is safe to assume that they can read unless you are working with small children. Even if you were working with small children, you are probably better off showing images than a lot of text."

This example is a trap I have fallen into. When I am nervous about a particular topic, I tend to put all the words I plan to say directly on the slide. That way I won't forget something important. But you can and should use speaker notes.

# “Points of View. PowerPoint in the Classroom” (3/5)

The screenshot shows a PowerPoint slide titled "Points of View. PowerPoint in the Classroom" (2/6). A blue callout box contains the heading "Power Point Don'ts" and a bulleted list: "Don't read your presentation to your audience, it is safe to assume that they can read unless you are working with small children. Even if you were working with small children, you are probably better off showing images than a lot of text." Below the slide is the caption "Example of a bad Powerpoint slide". The slide is numbered "Slide 12 of 13". To the right is a sidebar titled "Conclusion" with three bullet points: "Use vocal variety", "Rehearse", and "Stay within your time limits". Below the sidebar is a note: "Here's a bad slide. Let me read it to you. Don't read your presentaiton to your audience. It is safe to assume that they can read unless you are working with small children. Even if you were working with small children, you are probably better off showing images than a lot of text." Another note below it says: "This example is a trap I have fallen into. When I am nervous about a particular topic, I tend to put all the words I plan to say directly on the slide. That way I won't forget someting important. But you can and should use speaker notes." The bottom of the screen shows standard presentation navigation icons.

Speaker notes view from PowerPoint

## Speaker notes

This is a view of the speaker notes from a Powerpoint presentation. The left side of the screen shows the slide your audience is currently looking at. The lower right corner contains your speaker notes. It's a great relief to have this up when you are talking. Sometimes I read the speaker notes directly, and sometimes I will improvise a bit. But it is my security blanket.

A nice bonus appears in the upper right corner. You get a preview of your next slide. Often this gives me a chance to lead into the slide before I actually display it.

The speaker notes version works great when you have two or more monitors. Or you can print the speaker notes as a pdf file.

# “Points of View. PowerPoint in the Classroom” (4/5)

- PowerPointlessness
  - Transitions, sounds, other special effects
  - Distract the viewer from your main message
  - Distract you from more important elements

## Speaker notes

Here are two quotes from the paper worth remembering.

PowerPointlessness is “any fancy transitions, sounds, and other effects that have no discernible purpose, use, or benefit”

“Presenters may be seduced into spending more time on the appearance of the slides than on the organization of their thoughts or the sequence in which ideas should be presented.”

# “Points of View. PowerPoint in the Classroom” (5/5)

- PowerPoint Master Slide
  - Template to insure consistent appearance
  - Allows branding.

## Speaker notes

Although I do not recommend this, many people advocate the use of a master slide or template. This provides a consistent appearance to your presentation. It also allows for branding. If everyone from a given company or organization uses the same background image and color scheme, people will start to know and remember the organization that is sponsoring all of these talks. It's part of promoting a particular corporate image.

# UMKC templates (1/7)



UMKC PowerPoint template

## Speaker notes

Here is a series of templates that UMKC provides. I do not recommend their use.

# UMKC templates (2/7)



UMKC PowerPoint template

# UMKC templates (3/7)



UMKC PowerPoint template

# UMKC templates (4/7)



UMKC PowerPoint template

# UMKC templates (5/7)



UMKC PowerPoint template

# UMKC templates (6/7)



UMKC PowerPoint template

# UMKC templates (7/7)



TITLE

Subtitle

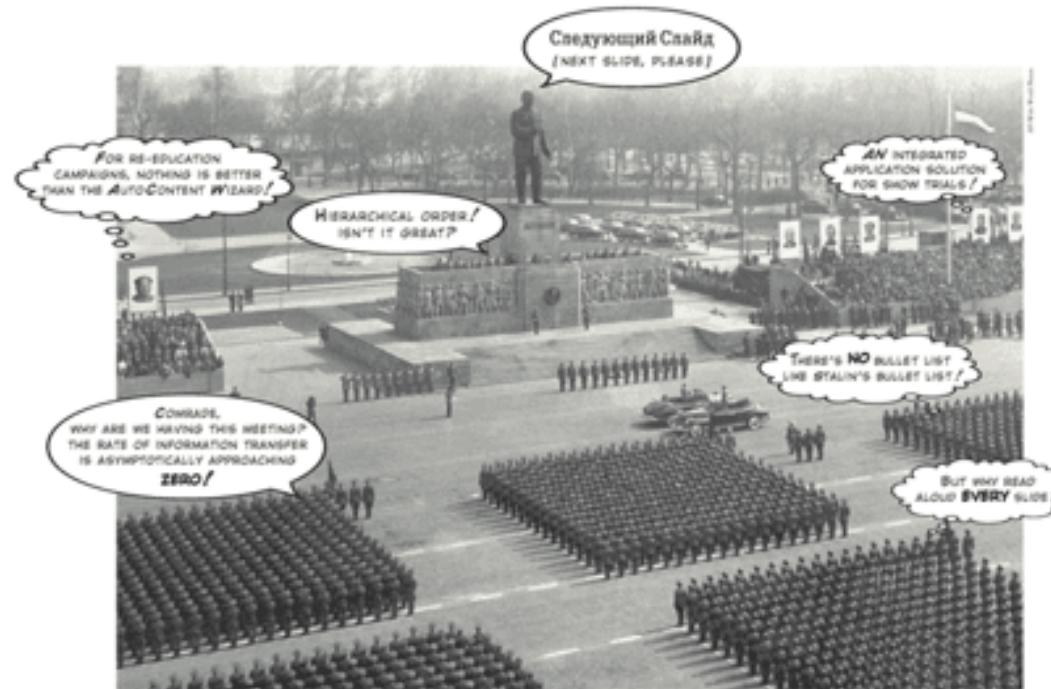


# Do you really need slides? (1/4)

Edward R. Tufte

*The Cognitive Style of PowerPoint:  
Pitching Out Corrupts Within*

SECOND EDITION



Front cover of The Cognitive Style of PowerPoint

## Speaker notes

There is a minority, but a very vocal minority who believe that the process of presenting information using slides in a program in PowerPoint is inherently flawed. It is not that people are using the tool wrong. It is that the tool itself is incapable of producing meaningful interactions.

Edward Tufte is probably the most famous voice among these critics. He believes that programs like PowerPoint “weaken verbal and spatial reasoning, and almost always corrupt statistical analysis.” He especially hates the use of bullet points.

# Do you really need slides? (2/4)

The screenshot shows a web browser window with the URL [norvig.com/Gettysburg/](http://norvig.com/Gettysburg/). The page title is "The Gettysburg Powerpoint Presentation" and the date is "11/19/1863". The content is a satirical speech by Abraham Lincoln. It includes a "Click here to start" button, a table of contents, author information, download links, and a note about the presentation's preparation.

And now please welcome President Abraham Lincoln.

Good morning. Just a second while I get this connection to work. Do I press this button here? Function-F7? No, that's not right. Hmm. Maybe I'll have to reboot. Hold on a minute. Um, my name is Abe Lincoln and I'm your president. While we're waiting, I want to thank Judge David Wills, chairman of the committee supervising the dedication of the Gettysburg cemetery. It's great to be here, Dave, and you and the committee are doing a great job. Gee, sometimes this new technology does have glitches, but we couldn't live without it, could we? Oh - is it ready? OK, here we go:

[Click here to start](#)

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Author: Abraham Lincoln  
Email: [president@whitehouse.gov](mailto:president@whitehouse.gov)  
Home Page: <http://www.whitehouse.gov>  
[Download presentation: Gettysburg.ppt](#)

*This presentation prepared with the help of Microsoft Powerpoint Autocontent Wizard. Where could we go without it?*

[Peter Norvig](#) -- See [the making of](#) the presentation and a [related essay](#) and a [video interview](#). -- Permission is granted to use this presentation in any course or educational presentation.

First page of Peter Norvig's PowerPoint satire

## Speaker notes

Peter Norvig has a satirical slide show up about Lincoln's Gettysburg address. This is one of the most famous speeches in U.S. History. I want to read it to you right now, because it is so well done.

"Four score and seven years ago our fathers brought forth on this continent a new nation, conceived in liberty and dedicated to the proposition that all men are created equal. Now we are engaged in a great civil war, testing whether that nation or any nation so conceived and so dedicated can long endure. We are met on a great battlefield of that war. We have come to dedicate a portion of that field as a final resting-place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this."

Note: I might stop here, or I could read the rest of the speech.

But in a larger sense, we cannot dedicate, we cannot consecrate, we cannot hallow this ground. The brave men, living and dead who struggled here have consecrated it far above our poor power to add or detract. The world will little note nor long remember what we say here, but it can never forget what they did here. It is for us the living rather to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced. It is rather for us to be here dedicated to the great task remaining before us—that from these honored dead we take increased devotion to that cause for which they gave the last full measure of devotion—that we here highly resolve that these dead shall not have died in vain, that this nation under God shall have a new birth of freedom, and that government of the people, by the people, for the people shall not perish from the earth."

Peter Norvig imagines what would happen today if Abraham Lincoln gave the same address and used PowerPoint to "enhance" his talk.

# Do you really need slides? (3/4)

Agenda

- Met on battlefield (great)
- Dedicate portion of field - fitting!
- Unfinished work (great tasks)

11/19/1863

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Second slide from Peter Norvig's PowerPoint satire

## Speaker notes

One of the earlier slides reads “Agenda” with bullet points

Met on the battlefield (great)

Dedicate portion of field - fitting!

Unfinished work (great tasks.)

Notice how the bullets literally suck the life out of Lincoln’s inspirational words? Here are the original sentences.

“We are met on a great battlefield of that war. We have come to dedicate a portion of that field as a final resting-place for those who here gave their lives that that nation might live. It is altogether fitting and proper that we should do this.”

and a few sentences later

“It is for us the living rather to be dedicated here to the unfinished work which they who fought here have thus far so nobly advanced.”

# Do you really need slides? (4/4)

- Two alternatives to slides
  - Stand in front of your audience and talk
  - Use a handout
- Counterpoint: why I am using slides today
  - My customers demand PowerPoint
  - Needed for remote presentation
  - Slides serve to show structure

## Speaker notes

So if you don't use slides, what should you do?

First, there is nothing wrong with just standing in front of your audience and talking. Abraham Lincoln did a pretty good job doing this at Gettysburg. It is not an easy task quite honestly, but I have done it. You end up looking at your audience a lot more if there is no PowerPoint slide up on the projector behind you.

When I do skip the slides, I almost always prepare a handout and pass it out to the audience ahead of time. The criticism of using handouts is that people will read your handout instead of listening to your talk. There is nothing wrong with this, other than an affront, possibly to your ego. If people read your handout during the talk and they learn everything they need to know from the handout, then your talk was a success.

Having done this for many years, I have returned to using PowerPoint for my talks.

The bullet points is not the point that you are currently talking about. It is the bullet points just before and just after the bullet point you are talking about. Having a series of bullet points reminds the audience where the speaker was just a few seconds or minutes ago and where the speaker will be a few seconds or minutes from now. If your bullets follow a logical sequence, seeing them all up on the screen reinforces that logical sequence.

# Conclusion

- Use vocal variety
- Rehearse
- Stay within your time limits