

Presentation Skills and Scientific Writing

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Aim of the meeting

Part 1: Scientific writing

- ◆ Structure of the paper
- ◆ Paper organization
- ◆ Referencing
- ◆ Formatting and style issues

Part 2: Presentation skills

- ◆ Getting started
 - Getting down to work
 - Nervous at presenting
- ◆ How to structure your presentation
 - Help the audience to follow
 - Timing: finishing (in a hurry)
 - Answering questions
- ◆ The other side: asking questions, feedback, being the chairman

Important points:

Subject

Purpose

- ◆ to exchange the scientific knowledge
- ◆ to ask and answer specific questions

Audience

- ◆ scientists and those interested in the subject
- ◆ a publisher or an editor

Front Matter

- ◆ Title (fewest possible words that describe the contents)
- ◆ Author's (co-authors) name and address
- ◆ Abstract (miniversion of the paper, no citations)
- ◆ Keywords

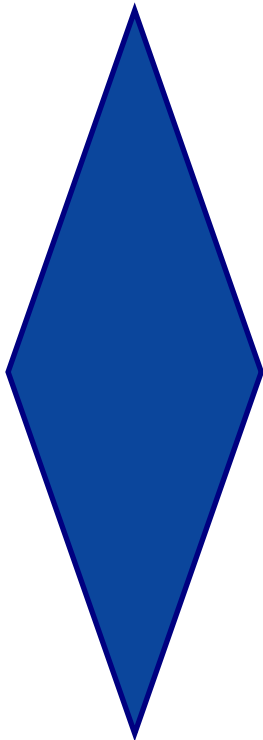
Article Body

- ◆ Introduction
- ◆ Related work
- ◆ Your main message: theoretical and experimental sections
- ◆ Results
- ◆ Discussion
- ◆ Conclusion and future work

End Matter

- ◆ Acknowledgment (technical help and financial assistance)
- ◆ References (at 52 journals were found 33 different styles for listing)
- ◆ Appendixes (optional)

The principle of the diamond



1. Introduction
2. Related Work
3. Your Message
 - ◆ Methods
 - ◆ Evaluation: methodology, results
 - ◆ Discussion
4. Conclusion and Future Work
5. References

Abstract:

- ◆ **Descriptive abstract**
 - or topical abstract, describes the contents but contains too little substance and detail
- ◆ **Informative abstract**
 - self-explanatory report on a scientific investigation (research objectives for conducting the investigation, the basic method used, and the results and significant conclusions) - 200 to 250 words
- ◆ **Extended abstract (some conference proceedings)**
- ◆ No references or citations

Introduction:

- ◆ call attention to the specific subject, define the problem
- ◆ provide background and present the results of other studies (literature review)
- ◆ list the structure of your research project and what you plan to present in your paper

Reading a scientific article isn't the same as reading a detective story. We want to know from the start that the butler did it (Ratnoff, 1981)

Related Work:

- ◆ **Developing an outline**
 - ◆ chronological arrangement
 - ◆ comparison and contrast in contraversional theories
- ◆ **Creating a skeleton**
 - ◆ select a few documents and write about each
 - ◆ discern the main points of their contents

Methods

- ◆ complete information of materials and methods used, conditions present, actions, experimental design, etc.
- ◆ this section usually has subheadings; when possible match those to be used in Results
- ◆ enough information must be given so that the experiments could be reproduced
- ◆ ask a colleague if he/she can follow the methodology

Results

- ◆ display of data with logical development showing how your findings satisfy your objectives
- ◆ where possible give illustrative examples and compare those with known results from literature
- ◆ use tables and figures
- ◆ "the fool collects facts; the wise man selects them" (J. W. Powell, 1888)

Discussion

- ◆ you discuss, you do not recapitulate the results
- ◆ show the relationship among observed facts

Conclusions:

- ◆ start with most important conclusions
- ◆ state your conclusions as clearly as possible
- ◆ summarize your evidence for each conclusion
- ◆ end with a short summary/conclusion regarding the significance of your work

Future work:

- ◆ Identify most promising directions of further research
- ◆ Identify practical impact of presented ideas or methods
- ◆ Discuss further possible (but not yet considered) extensions to the proposed solution and their possible impact
- ◆ Identify relationships to other themes and impact of integration
- ◆ Identify promising technical aspects (scalability, robustness, comprehensive evaluation, etc.)

- ◆ For a better credibility you have to review the literature and show that your contribution extends from a solid foundation of research
- ◆ Quality and quantity of the sources you have consulted will enhance your work
- ◆ You have make it possible for readers to retrace your steps
- ◆ Your references can be as valuable as your research methods and findings
- ◆ At least three citation styles (in-text citations) and 100 reference styles are commonly used

Alphabet-number system

◆ Examples in the text

- In 1986 Schmitt (10) developed a
- With optimum design sensitivity (10) ...

◆ References

- 9. Schittkowski, K. 1999. Nonlinear Programming Software.....
 - 10. Schmitt, L. A. 1986. Symposium summary and concluding remarks. ...
- ◆ list of references in author alphabetical order

Name-Year (Harvard) system

◆ Examples in the text

- Schmitt (1986) developed a
- With optimum design sensitivity (Schmidt, 1986) ...

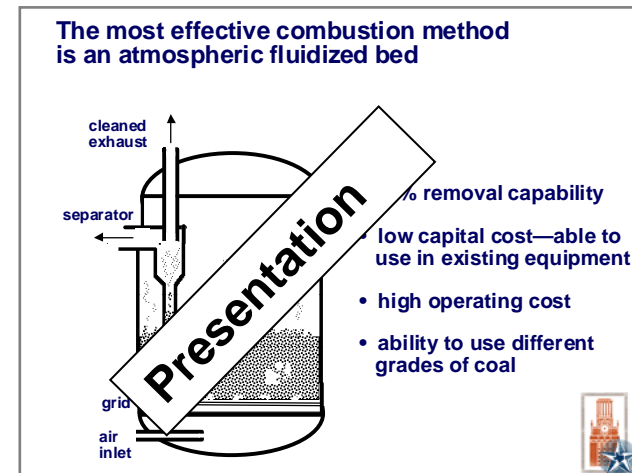
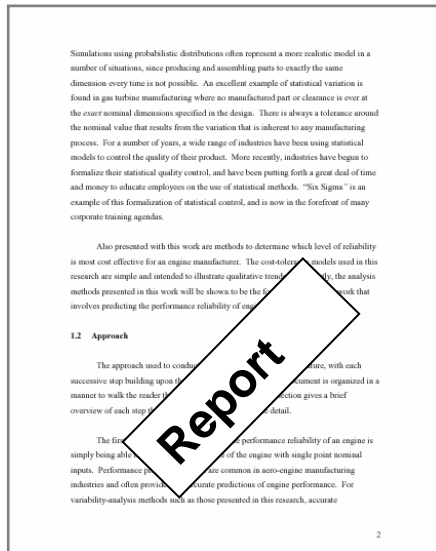
◆ References

- Schittkowski, K. 1999. Nonlinear Programming Software..... 1999
 - Schmitt, L. A. 1986. Symposium summary ... 1986
- ◆ list of references in author alphabetical order

- ◆ Avoid the dual publication
- ◆ Don't use the work of others without appropriate attribution
- ◆ List only those co-authors who contributed substantially to the work

Software and styles

- ◆ LaTeX vs. WinWord – several pro's and contra's
- ◆ **Style is the way you communicate the content to the audience**
- ◆ Style, bibliography formatting and the size of an article are usually prescribed by conference/journal. There are soft guidelines for diploma/master thesis, dissertations, etc.



- ◆ Using appropriate sharing format
- ◆ Anonymization

- ◆ Davis, M. Scientific Papers and Presentations, Academic Press, 1997
- ◆ Day, R. A. How to Write and Publish a Scientific Paper, 4th Ed., Cambridge University Press, 1995
- ◆ Michaelson, H. B. How to Write and Publish Engineering Papers and Reports, 3rd Ed., Oryx Press, 1990
- ◆ O'Connor, M. Writing Successfully in Science, Academic Press, 1991
- ◆ Paradis, J. G. and Zimmerman, M. L. The MIT Guide to Science and Engineering Communication, MIT Press, 1997
- ◆ <http://www.writing.eng.vt.edu/>

What is a successful presentation for you?

When have you seen a really good presentation?

Why do you think that presentation was good?

Can you establish other criteria from presentations you have seen?

A present



Every now and then you will have to give a presentation

Learn:

- ◆ How to use rhetoric skills and how to present scientific information at a conference or seminar
- ◆ What you shouldn't do
- ◆ Get a feeling for timing

You want to present your work to an audience in X

Define your audience

- ◆ expert; non-expert; mixed

Define your time

- ◆ fixed time limit: seems long, but usually too short

Define your environment

- ◆ accommodate - in a strange room - to the equipment (beamer, microphone, board)
- ◆ have back-ups (power supply, memory stick, CD, handouts, board, ...)

Define your design

- ◆ logo, name of the institute, colour, layout, structure, ...

Accept that you are probably going to be nervous

Find your own solution(s):

- ◆ Something to drink
- ◆ Deep breathing
- ◆ Go for a walk
 - ⇒ fresh air
- ◆ ...

The only effective remedy: Accept it. Have strategies!

Know your slides:

- ◆ try to present your talk to friends etc. before presenting it at a conference
- ◆ don't finish preparation one minute before your talk starts

Think about your equipment:

- ◆ notebook: hotkey for external monitor, beamer resolution, beamer, disable screen saver, remote control, presenter/mouse, laser pointer, power supply+adapter, light (where is the dimmer? off/on?)
- ◆ overhead projector (where is the switch?), pointer, board, pen ...

The most effective strategy: Know the first minute of your talk – your introductory material / your first slide(s)- off by heart

Show your *title / first* slide

- ◆ eye contact to (or neck region of) audience, greet, title, your name, where you work, smile
- ⇒ audience turns towards your slide and doesn't focus on you

Show your *second* slide: overview of your presentation

- ◆ give informative overview
- ◆ don't: Overview
Introduction
Details
Conclusion
References

Continue with your presentation/slides

Voice: Don't worry if it is cracking or squeaking

- ◆ Try to speak clear and slowly, loud enough

Blushing: Ignore

⇒ the audience is watching your slides!

If reading: Format your notes for easy path finding

Try to **look at the audience** as much as possible

- ◆ You are the expert, observe them

Give presentations as often as possible

Be aware of what people will do when they are **nervous**

- ◆ Find out what you do -> work on it

Brief notes ?

Cards ?

An annotated full script ?

Font: large enough, easily readable while under pressure / in dim light?

If you lose your place: can you readily find your way back into your notes while under pressure?

If you need a full script: can you use an annotated script with keywords?

keywords	This is your text / the paper you submitted to a conference . Now you are invited to give a talk. You are very nervous and you don't know what do to against it.
margin with keywords	You think that you could use your paper and read it out . However, your friend says that this is not a good idea .
more keywords	You decide to use your paper anyway, because what you want to say is written in the text.
keywords	You highlight some bits and peaces in the text and you add a column, so that you have a margin on the left. Into this margin you write down some keywords . With the help of the keyword and the text you can find your way through your presentation and if necessary you can read out bits of the text .

Mistakes when you read:

Voice can become monotonous and dull

No enthusiasm: audience is bored

Stance: rigid

- ◆ better don't read out too long, but move a bit (while reading)

Audience: feel out of contact

Losing your place in the script after looking up

- ◆ better use cards

Structure your presentation and know your structure

don't excuse yourself !

- ... using notes
- ... graph not nice
- ... spelling errors
- ... etc.



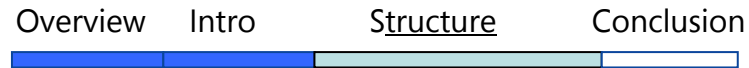
The major fault with many presentations is:

The structure of the material doesn't harmonize
with
the visual aids
or
the way you deliver it.

Common mistakes:

- ◆ Unstructured facts
- ◆ No obvious framework
- ◆ The audience becomes disoriented

If space, within the presentation:
(whole set of printouts)



Overview
Introduction
Structure
Details
Conclusion
References

or use handouts:

- ◆ if your presentation is complex and/or
- ◆ cross-reading or returning to an older information is useful –
 - but not necessary for your presentation
- ◆ if a beamer-, or board-presentation, etc. is not possible or
 - can't be seen very well by the audience

Handouts

- ◆ are an alternative for central information spots or additions
- ◆ should contain important facts supporting your presentation
- ◆ should not consist of too much lose paper

Be very selective. You can't include everything:

Structure material as a diamond of detail:

1. Title slide

2. Introductory overview slide

brief summary: place your work in context, give the big picture; why don't put results in here? **Tell them what you are going to do**

3. Place work in context

good summary of methods, results and conclusion

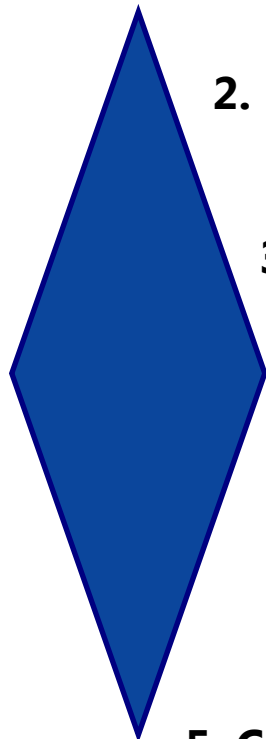
4. The detail

then/here give detail; **tell them**

5. Concluding overview slide

of what your work means:

Your conclusions and further directions. **Tell them what you've told them**



1

2

3

Slides for the basic structure

Title slide

Overview slide

Detail

Conclusion slide

Title of your presentation

Your name

Where you work

- ◆ Institute, university, cooperation partners, working group, ...

Other material

- ◆ Logo(s), etc.

Immediately after title slide

-- or --

After a (short, expressive) intro/motivation part

Gives overview of your presentation:

- ◆ WHY you are doing this work (Context)
- ◆ HOW you did it (Methods)
- ◆ WHAT you discovered (Results)
- ◆ *Possibly*. WHAT you concluded (Conclusions)

Try to start with the known

Move to the unknown

State the question(s)

- ◆ KISS :: **keep it short and simple**
- ◆ Clearly separate minor questions from the main question – usually in a separate sentence
- ◆ Make sure the question(s) follow(s) logically

Very briefly, state how you set out to answer the question(s)

Make clear: newness, importance

“When you have to come to the end of the introductory overview slide, the audience should know why the research was prepared and carried out.”

Huth, E.: How to Write and Publish Papers in the Medical Science

“If the problem is not stated in a reasonable, understandable way, the audience will have no interests in your solution.”

Day, R.: How to write and publish a scientific paper

Don't:

- ◆ Overview
- ◆ Introduction
- ◆ Structure
- ◆ Details
- ◆ Conclusion
- ◆ References

Better:

Aim of the meeting

Getting started

- ◆ Getting down to work
- ◆ Nervous at presenting
- ◆ Strategies when nervous
- ◆ Using notes

How to structure your presentation

- ◆ Help the audience to follow
- ◆ Dealing with details
- ◆ Appearance, style, voice
- ◆ Starting, body language, pointer, pausing + interruption
- ◆ Timing: finishing (in a hurry)
- ◆ Answering questions
- ◆ Visual aids

Action list

Have a clear framework

Make sure that your visual aids show clearly where you are in the scheme of the talk

Use headers at top of slides

Results (1)

- It is good to hear about presentation skills

Results (2)

- It is better to practice with feedback

Call it Conclusions

What your work means:

- ◆ Conclusions you draw from your work
- ◆ No new material

What you would most like the audience to remember

- ◆ Conclude by briefly restating the answer
- ◆ Establish newness/importance

Possibly. Future directions of the work

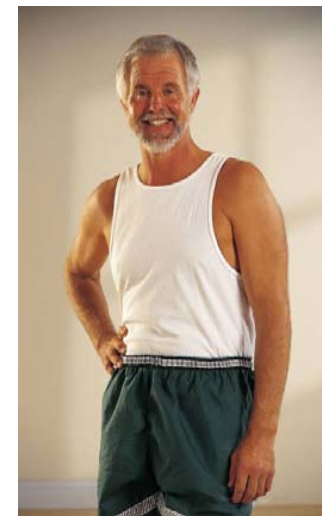
Yes, your appearance influences your presentation



Know the audience:

- Standing in front of a hacker convention in an Armani suit can harm your presentation

Giving a presentation for some company business people in shorts can be worse



Better (a bit) over- than underdressed

Use spoken language, not written language:

"To do this, we raised the temperature..."

NOT: *"In order to achieve this, the temperature was raised..."*

Don't use rough language or dialect

(if your audience doesn't expect and want you to do so)

Don't be afraid of using *I* and *We*

Use simple clear words

but include the correct professional vocabulary

Try to pronounce as clearly as possible

Don't read out subheadings:

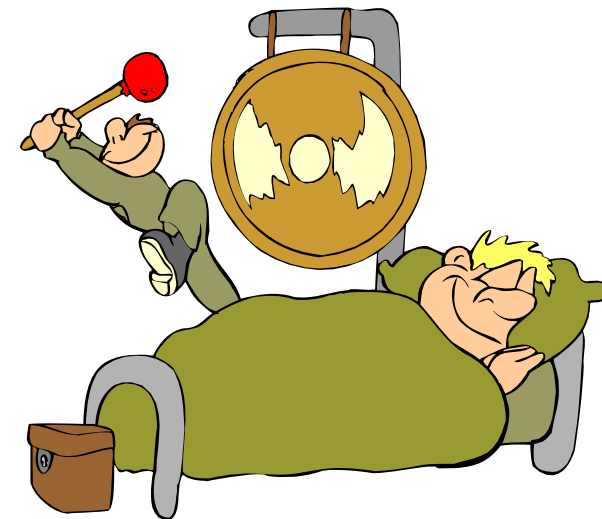
"Objectives. The objectives were..."

Verbal hints are important:

"This is important because..."

"This is interesting because..."

⇒ wakes the audience up



Almost everybody is able to speak

Speak: loudly, clearly and deliberately

Modulation of your voice can help you to structure your presentation and keep your audience awake

Find out your verbal tics:

“basically, you know, sort of, like, uuumm, aaeehh, ...”

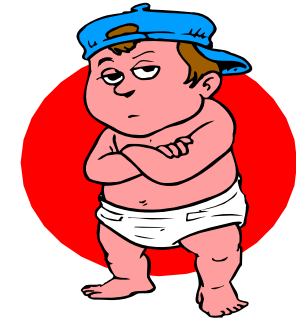
Don't:

- ◆ speed up
 - ◆ be quieter than usual (non-native speakers)
 - ◆ become monotonous
 - ◆ think your voice is cracking and wobbling
- ⇒ usually it is not, don't worry about it.

- ◆ Be yourself!
- ◆ Channel for information you don't want to give?
- ◆ Cultural context: not every culture interprets every signal the same way (e.g. Japan, Tibet..)
- ◆ Stand steadily and look clear, try to smile -> friendly
 - ◆ don't walk up and down
 - ◆ don't crouch over the laptop
 - ◆ don't grip something with your head down
- ◆ Eye contact
 - ◆ Avoiding eye contact -> insecurity, subordination
 - ◆ Direct eye contact -> aggressive
- ◆ Avoid rigid / over-extravagant gesture

Hands – a problem ?

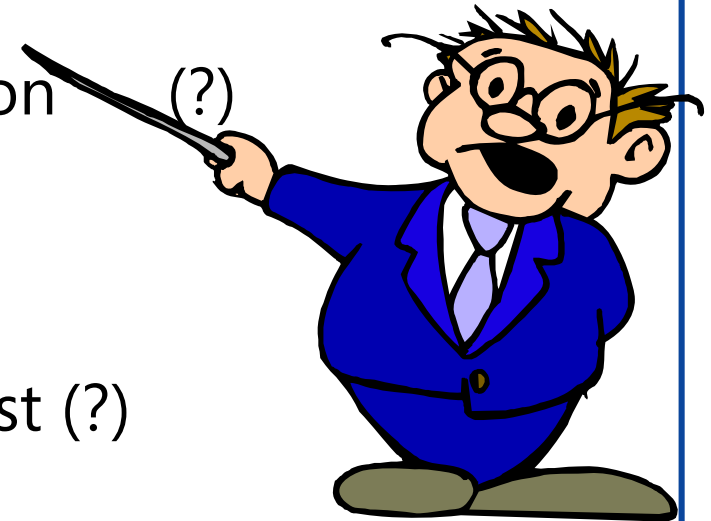
- ◆ Don't cross your arms
 - > wish for isolation, signal: I don't want to be here
- ◆ In pocket -> not interested
- ◆ On hips or hooking the thumbs into waistband or pocket
 - > aggressive
- ◆ Fiddling with a pen, or with something in your pocket, your hair
 - > worse: making noise with clicking a pen or something



Duke of Edinburgh position (?)



Angle hands in front of waist (?)
(excellent for voice)



Let your hands dangle;
underline with hands your explanations

You can use a pointer !

- ◆ But *sometimes* **better**: **animation** / highlighting.

Don't:

- ◆ turn your back to the audience
- ◆ point with finger: your line of sight is different from the audience's
- ◆ point, but don't know where your pointer points to / don't point and turn away and the pointer goes all over the place
- ◆ block view of part of the audience
- ◆ move the pointer too fast
- ◆ shake the pointer

If you lose your place or have to pause, say nothing:

- ◆ Control your body language, find your place again

Interruption beyond your control, say

"I'll repeat that..."

or continue without hesitation

A pause for the speaker seems longer than for the audience

Pause because of thinking : look at someone in audience;
not at ceiling or floor

Interruption = question(s)

Be professional:

- ◆ Put up your concluding slide and BRIEFLY describe your conclusions
- ◆ Then just slightly nod your head and say *"Thank you"*
 - ⇒ job of the chair to ask for questions
- ◆ Don't fluster

Common mistakes:

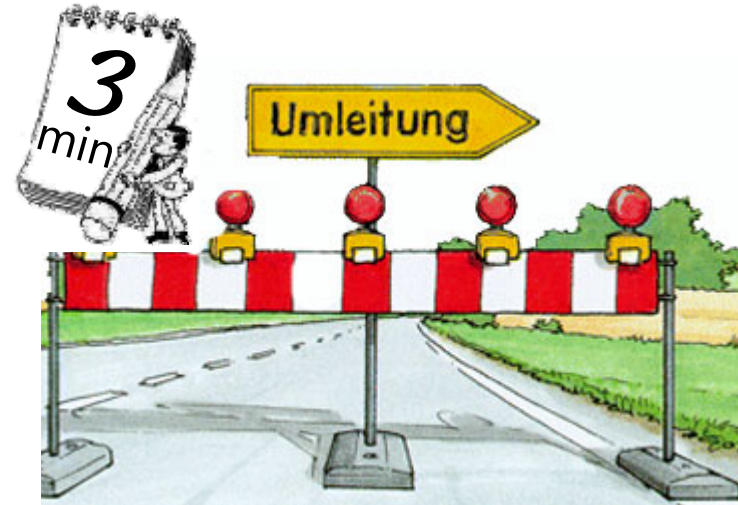
- ◆ Nervous -> body language
 - "Well, that's all I've got to say, really"*
 - "That's it – so – um – thank you."*
 - "I'd like to thank you for your kind attention in listening to this talk. "* (too artificial)

- ◆ Don't fluster
- ◆ Smoothly finish the sentence you are saying
- ◆ Say something like

"I'm sorry I don't have time to give you the details here. But I'd be pleased to talk to anybody afterwards."
- ◆ Put up your conclusion slide
- ◆ Say

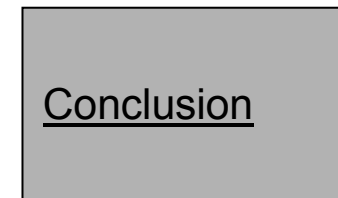
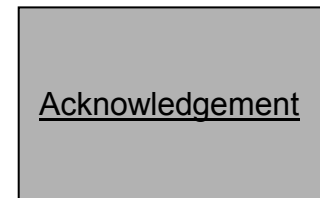
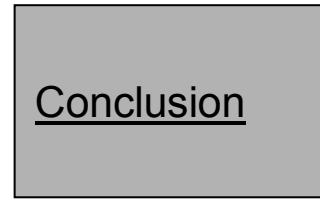
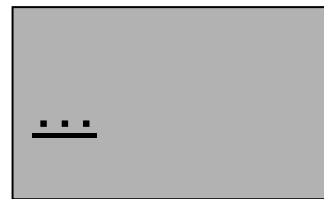
"And so, in conclusion, ..."
- ◆ If time is very short

put up Conclusions slide
for audience to read

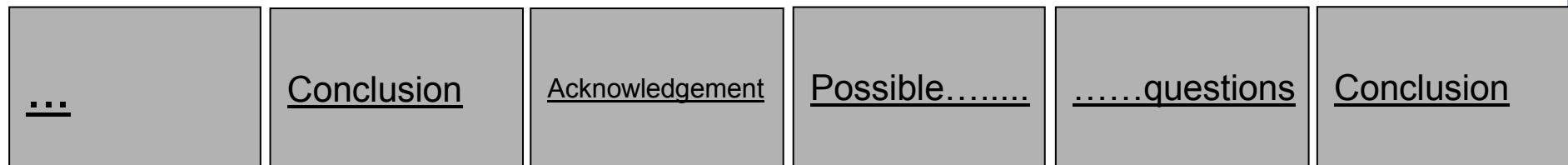


How to reach your Conclusions slide smoothly:

- ◆ Copy your Conclusions slide so that it appears twice:
 1. In its normal position
 2. In the final position in your PPP series
- ◆ Hit *End* key to move to final slide in PPP:



Work out possible questions beforehand



Have extra set of slides / use board, etc.

If necessary use board and available tools

(not only for answering questions !)

Good addition for some explanations or notes

- ◆ prepare it, before starting: pen, chalk, clean board, etc.?
- ◆ try to have a concept
 - ⇒ it's difficult to talk while writing
- ◆ don't swap the slides too often -> confuses audience
- ◆ prepare (carefully)
 - ⇒ can everybody read everything?

Make sure that you understand the question correctly

If not:

- ◆ Ask for further clarification
 - Still don't understand
 - ⇒ ask chairman
 - ⇒ s/he is responsible for a smooth overall course
- ◆ Repeat question if you think audience hasn't heard it
- ◆ Be honest: Don't avoid saying you don't know the answer.

Say:

*"I don't have the answer to that,
but could get it for you by tomorrow
because further research is necessary"*

(or similar)

Always ask questions and give comments:

- ◆ To clarify what you did not understand
- ◆ To recommend something
- ◆ To add new / unknown / important material
- ◆ To give another viewpoint
- ◆ ...

If you don't have questions at all, ask anyway about:

- ◆ Why is this work / research important
- ◆ How about costs / real time / etc.
- ◆ Future work / direction (if not stated before)
- ◆ ...

Feedback is important

- ◆ because it is like the applause for the actor on stage
- ◆ because you learn from your own mistakes
- ◆ always give feedback
- ◆ (unfortunately: no feedback culture)

'Who plays up to me is my enemy,
who blames me is my teacher.'

How to give feedback:

Start with the positive / good things (on the talk, etc.)

Move on to the things the presenter could have done better

- ◆ Don't say: This and that was very bad / idiotic / stupid
- ◆ But: You could improve here...; it wasn't too bad, but you could do better if...

Put your criticism in a positive way! Always praise, but make (necessary) improvements clear!

- ◆ Silyn-Roberts, H.: Writing for Science and Engineering, Papers, Presentations and Reports; Oxford 2000
- ◆ Fraser, J.: How to Publish in Biomedicine; Oxon 1997
- ◆ Day, R.: How to write and publish a scientific paper; 1998
- ◆ Huth, E.: How to Write and Publish Papers in the Medical Science; 1990
- ◆ Tufte, E.R.: The Cognitive Style of Power Point, Cheshire, Connecticut, 2003

- ◆ <http://www.writing.eng.vt.edu/>

Thank-you slide