

Physics Microteaching Mini-course

-On Public Speaking-

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About myself....

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- Ask me anything!

Why are we here?

- Public speaking:
 - Persuading the audience
 - Sharing something really interesting
- Focus on teaching
 - Research talk is a form of teaching!
- **"Teaching is dead easy. Teaching well... now that's hard"**

What matters in teaching?

Everything matters

- Content
- Presentation
- Delivery
- Body language
- Audience engagement

Today:

- Won't focus on technical aspects
 - E.g. font size, no fancy fonts, simple transitions
 - Can look these up
 - Can still end up with a terrible talk
- Instead: What drives our decision?

Who is your audience?

Who is your audience?

- They know far less than you
- They may or may not be interested
 - Different audiences have different interests
- They will be distracted
 - Texts, emails, playing games
 - They may be looking up materials

Who is your audience?

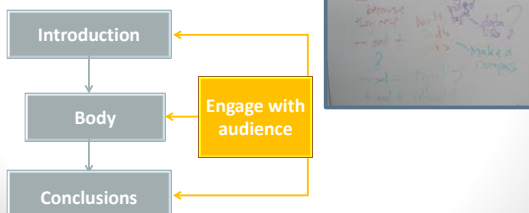
- They know far less than you
 - *Go slow (both content and presentation)*
 - *Present at right level*
- They may or may not be interested
 - *Plenty of motivation*
 - *Present what is interesting to your audience*
- They will be distracted
 - *Don't provide opportunities!*
 - *Think carefully about presentation*

Everything matters

- **Content**
- Presentation
- Delivery
- Body language
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Content

- Choose a topic
- Create a concept map
- Refine and organize



Rule #1: Provide enough information, but not too much

- **Audience know far less than you do**
- You do not want to lose your audience
 - Overestimate level of audience
 - Contain unnecessary information

Rule #1: Provide enough information, but not too much

- Less is more:
 - What are the 3/4/5 key messages?
- Work backwards: summary first
- As you prepare:
 - Am I providing enough details?
 - Do I absolutely need to say this?
- Some practical suggestions:
 - Cut outline for a short talk
 - Consider replacing equation with words

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Presentation Aids

- Power-point Slides
- Purpose?
 1. Provide summary of talking points
 - Can be very simple, minimal annotation
 - Just a series of figures, graphs, equations
 2. Study notes
 - Need a lot more details
 - Slides has to be stand-alone
- Balance between the two

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Rule #2: Audience can read or listen. Never both

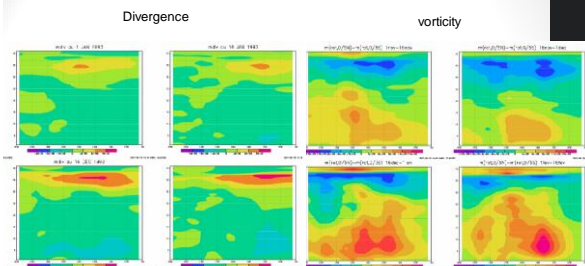
- Short sentences!
 - Avoid temptation to read off slides
- Always ask yourself: Do I need this?
- Never put equations/graphs you don't discuss
- For teaching: details in a separate set of notes

Rule #3: Present data effectively

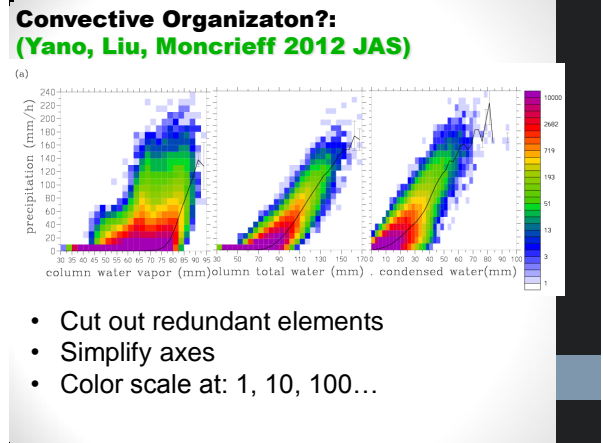
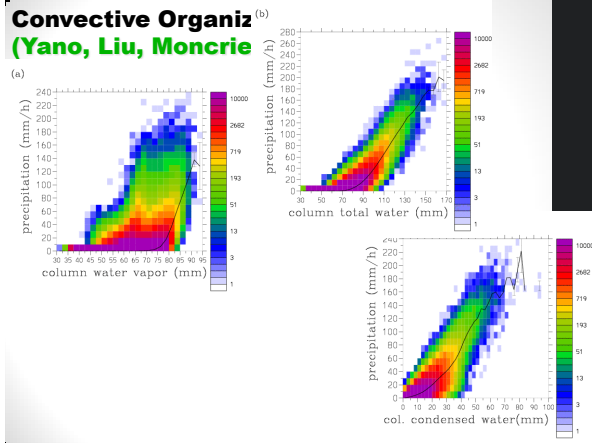
- A picture = 1000 words
 - Only if done with care!
- **Do not distract audience with**
 - Information you never mention
 - Hard to read labels
- Avoid temptation to copy and paste figures from paper

Bad example #1:

Temporal Evolution of Longitude-Height Section:



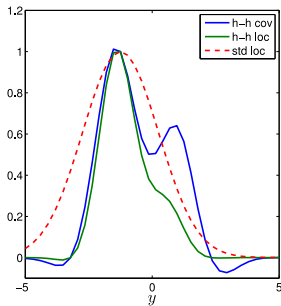
Bad example #2:



Bad example #3:

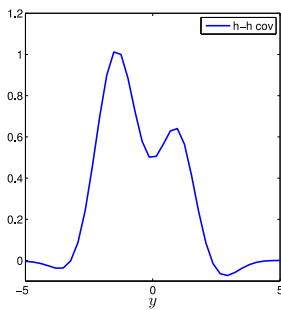
Which line are you drawn to?

Which line are you drawn to?

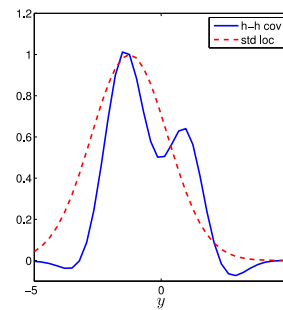


Use animation to control delivery!

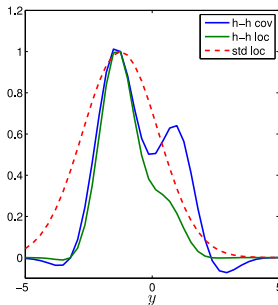
Blue curve with two bumps



Standard Gaussian



Localized function (green)



Rule #3: Present data effectively

- Trim excess details
- Magnify graphs as much as you can
- Put 1-2 take-home messages in words
- Use animations to control flow

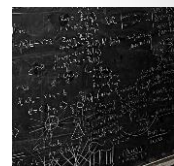
Blackboard vs Power Point

- Blackboard in lectures/tutorials
- What you write will be students' notes
- Pros:
 - Clear development of an idea/derivation
 - Flexible in some ways
 - Controlling level of detail
 - Can change solution on the fly
- Cons:
 - Writing may not be most effective use of time
 - Manage silence
 - Have to face board frequently
 - Voice control important
 - Effective use of board important

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Blackboard

- Good organization:
 - write down section headings
 - underline important parts
 - checking with the audience before erasing parts
 - Work through boards systematically
- Handwriting is legible
- Diagrams/equations clearly written/drawn
- Put in a lot of descriptions



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Summary: your audience is easily distracted

- Your job is to combat this
 - Make motivations clear
 - Make sure it is at the right level
 - Cut out unnecessary distractions (content)
- If you wonder if something is too basic
 - 95%: no!

We have a great script...
now what?

Everything matters

- Content
- Presentation
- **Delivery**
- **Body language**
- Audience engagement

General Tips

- Getting nervous is perfectly normal
 - Remember: you know more than your audience
- Treat it as a conversation
- Speak slowly and loudly
- Do not rush to finish
 - Look for exit points in your talk

Bad speaker

- What are the issues?
- <https://www.youtube.com/watch?v=YivQYel0vys>

Good speaker

- Feynman
- What elements make the lectures very interesting to the audience?
- https://www.youtube.com/watch?v=_Kab9dkDZJY

How to be engaging

How to be engaging

- Personality: enthusiasm, humour
- Body Language
 - Gesticulate
- Proximity & movement
 - Be dynamic
- Voice: ensure audibility and variety
- Awareness: watch and listen carefully
- Use pauses effectively
 - Signal a change in topic

Non-native speakers

- Accent is not a strong barrier
- Lack of confidence is!
 - Speak up
 - Speak slowly
 - Don't read off slides
 - Don't hide
- Students will get use to it

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Interaction with students

- Ask lots of questions
- Why?
 - Keep students engaged
 - Re-engage distracted audience
 - Active learning
 - Make sure they are on track!

Interaction with students

- Mechanics:
 - Give them time to answer
- If no response, then...
 - Repeat question
 - Break it down:
 - E.g. 'Find angular momentum'
 - 1) Does any one have any suggestions?
 - 2) What is the definition of angular momentum?
- Ask simple questions to get them into a habit
- Never answer your own question

Answer Questions

- Listen carefully and patiently for the question
- Repeat the question for the audience before answering
- Ask for clarification whenever needed
- Thank students for asking questions
- Be honest when you don't know

Key to a great talk:

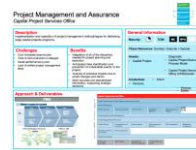
- Know your audience
- They know far less than you do
- They may or may not be interested
- They will be distracted
- These will guide your content and delivery

Closing remarks

- Have fun!
- You will probably make mistakes. It is okay!
- Key is to learn for next time:
 - Where did I lose my students?
 - Did I go off script?
 - Was I thrown off by an unexpected answer?

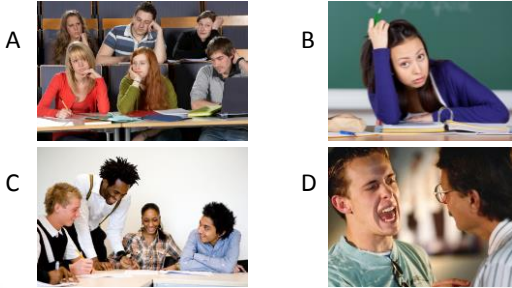
Presentation Aids

- Slides
 - Easy to read (sans-serif, font size >24)
 - Careful selection of colour scheme
 - Avoid excessive writing
 - Figures are well explained



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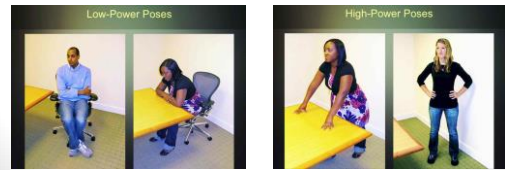
Read body language



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<http://www.theproject.net/wp-content/uploads/2011/12.jpg> http://elka.afon-portal.com/images/multimedia/147/thelatin_teacher.jpg
<http://www.schoolbehaviorfiles.wordpress.com/2011/12/engaged-learn.jpg>

The impact of body language

- Shaping how other people perceive us
- BUT also essential in shaping our own minds
 (Prof. Amy Cuddy, Harvard Business School, Power Posing)



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The room setting

Think of strategies for enhancing your presence in setting A or B based on:

1. Proximity and movement
2. Engaging the audience



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