

Scientific communication skills

Marta Ferreiro González
Victoria Manuel Delgado

University of Cadiz



- **Have you ever been listening to oral presentation that dealt with interesting topic and you were not able to pay attention until the end?**

Think about.....



- **Was it because of the topic/subject or was it the way the speaker/professor presented it?**

Objective

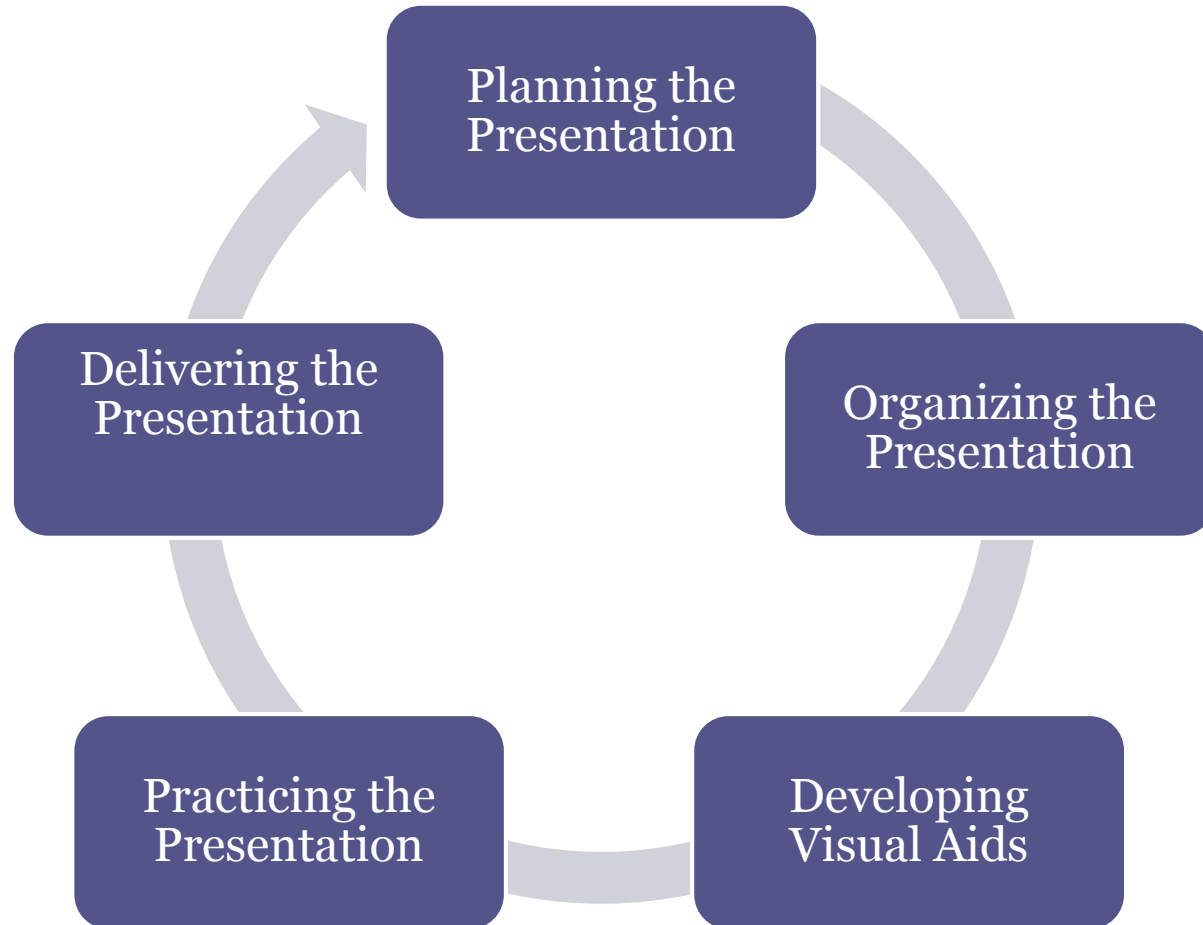


Prepare and deliver an oral presentation

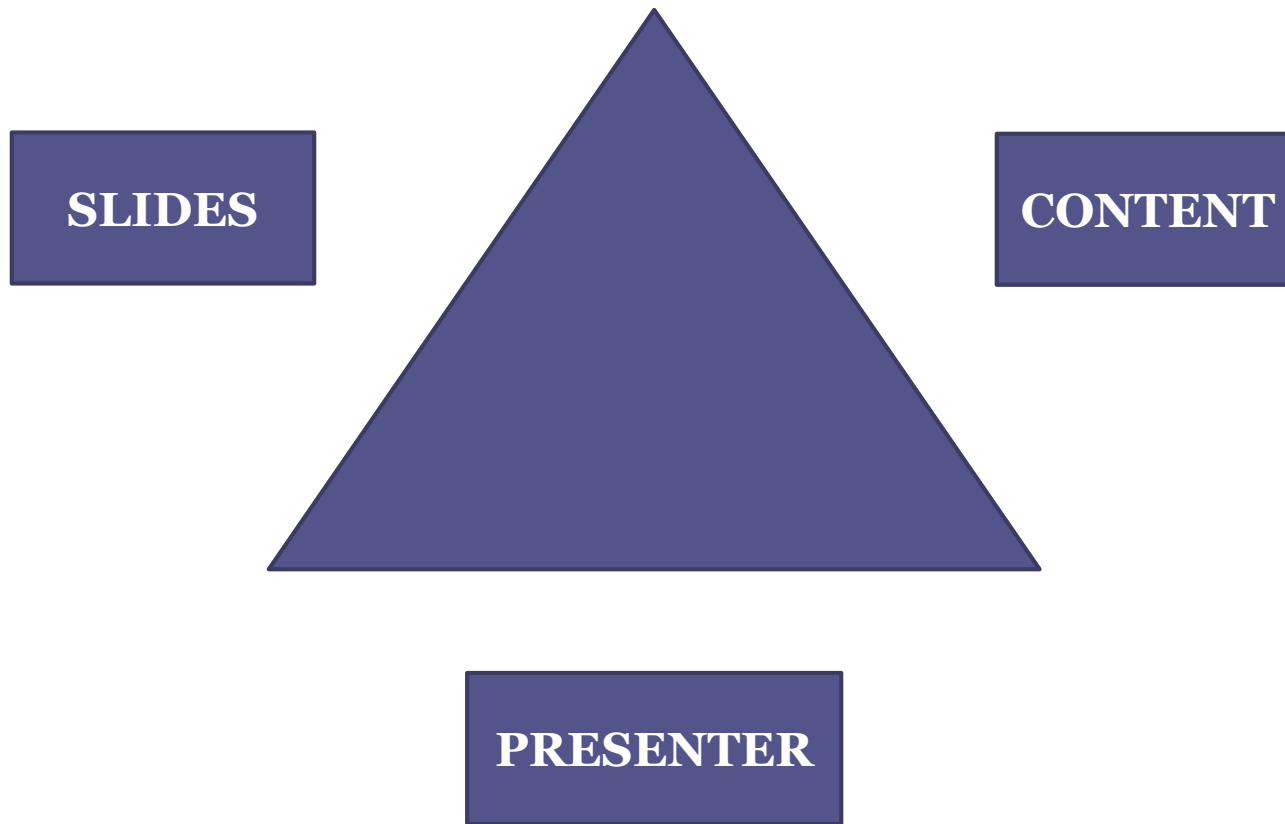
TASKS

1. Next day: 5 minutes presentation (free topic)
2. Last day: 10 min presentation applying what they learned. This last presentation will be evaluated by the professors.

Table of contents



A good presentation



Planning and organizing the presentation



- Before you begin to prepare your presentation

THE MESSAGE

What do I want the audience to know when I am finished?

How do I present my talk?

1. Topic
2. Audience
3. Structure

1. Topic

Think your topic!



2. Audience

- The scientific audience
- Expert Audience
- Student Audience
- General Audience



The type of audience



The type of presentation

KNOW
YOUR
AUDIENCE

- Informative
- **Scientific** (lectures, *Master's thesis*,
Doctoral thesis, conferences...)



Scientific presenta



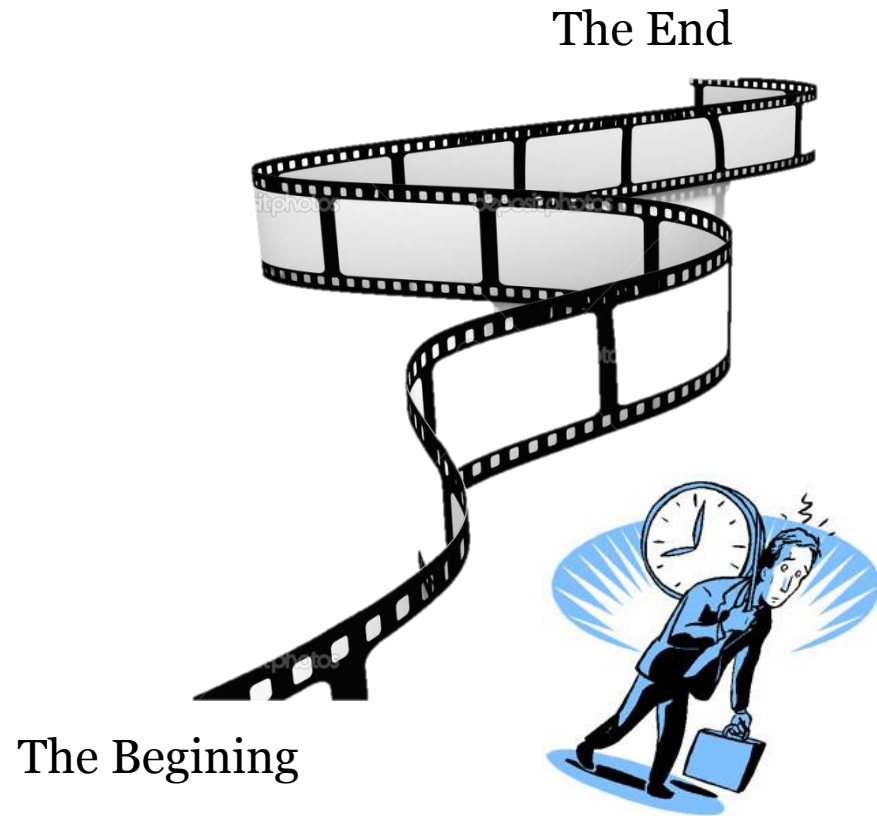
n in a Conference



Scientific presentation Master Thesis Dissertation

3. Structure

- Organized
 - Beginning or introduction
 - Middle or body
 - The end or conclusions
- Coherent
 - Clear and logical sequence
- Balanced



**A good oral presentation is good structured
This makes it easier for the listener to follow**

Introduction

Tells your audience the direction your presentation will take.

- State your **topic**
- Tell the audience what your presentation will cover.
- Outline the **main points**.

**A good introduction will capture an audience's
attention**

Conclusions

- Summary of the main points made in the body of the talk.
 - Restate the main points.
 - Re-answer the question.

**Don't introduce any new information in the
conclusion**

Master thesis

- Table of contents (outline slide)
- **Introduction or background**
- Objective
- **Experimental part**
- **Results and discussion**
- **Conclusions**



DOES THE ORAL PRESENTATION DIFFER FROM THE WRITTEN THESIS?

Main differences : oral presentation vs written report

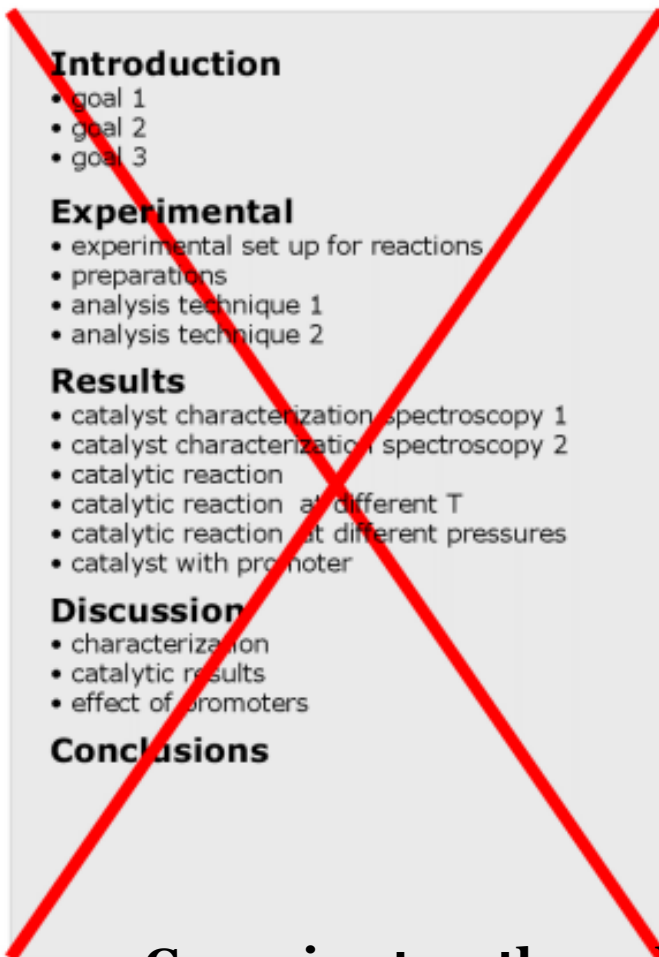
- In the presentation the **listener** by necessity **has to follow the order** in which the speaker presents this material.
- The **reader** of an article **can skip parts**, go back to the materials section, take a preview at the conclusions when he reads the results, etc.
- **Oral presentation:**
 - More localized in space and time
 - Impose a sequence and rhythm to the audience
 - Include some level of interaction



Good
Organized

Example

SAME CONTENT DIFFERENT WAY



Introduction

- goal 1
- goal 2
- goal 3

Experimental

- experimental set up for reactions
- preparations
- analysis technique 1
- analysis technique 2

Results

- catalyst characterization spectroscopy 1
- catalyst characterization spectroscopy 2
- catalytic reaction
- catalytic reaction at different T
- catalytic reaction at different pressures
- catalyst with promoter

Discussion

- characterization
- catalytic results
- effect of promoters

Conclusions

General Introduction

not too short, is very much appreciated by a large part of the audience

Catalyst & Characterization

- aims
- preparation of catalyst
- principles characterization technique 1
- results + interpretation
- principles characterization technique 2
- results + interpretation
- discussion of catalyst structure + conclusion

Catalytic Reaction

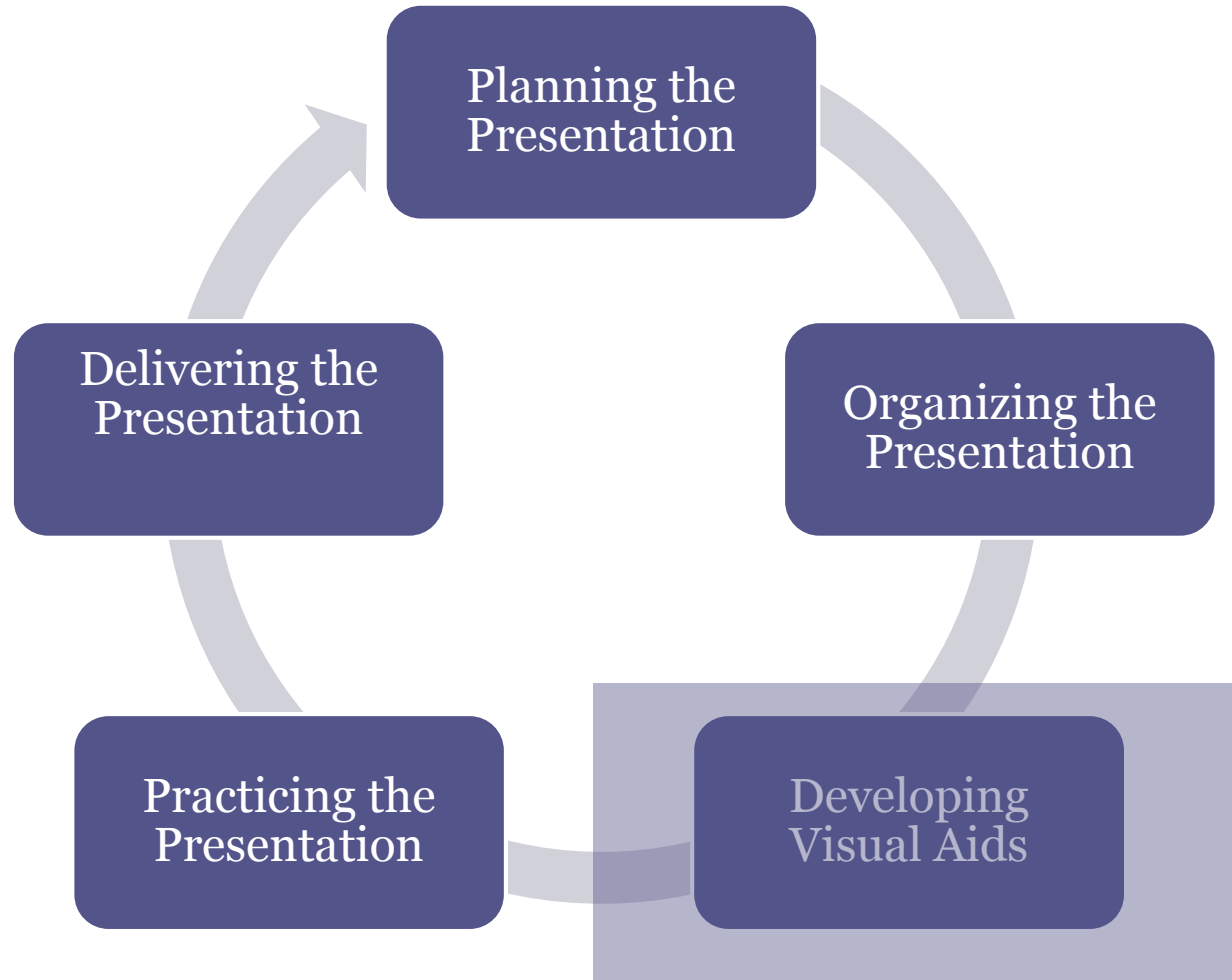
- aims
- experimental set up reactions
- results catalytic reaction
- results catalytic reaction at different T
- catalytic reaction at different pressures
- catalyst with promoter

Conclusions

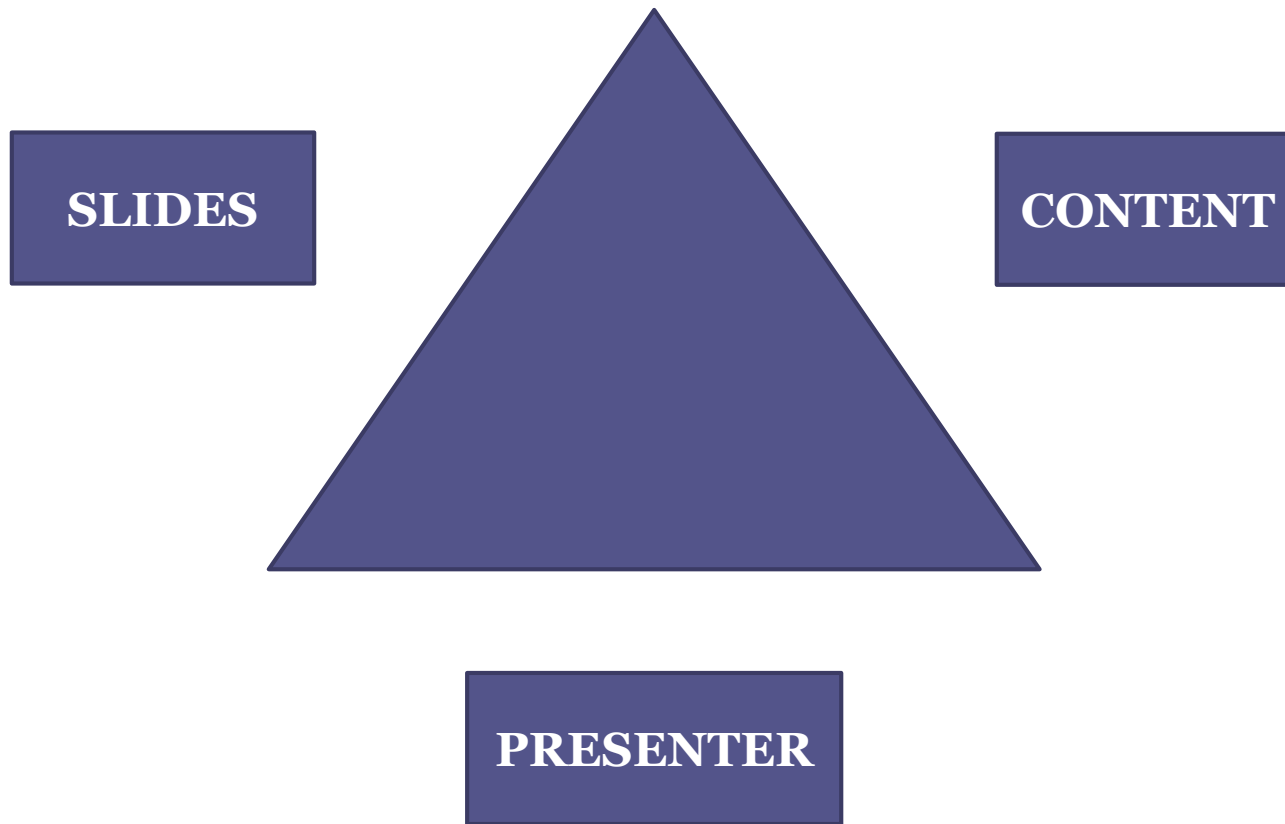
- catalyst structure
- catalytic properties
- assessment and outlook

Grouping together what belongs together

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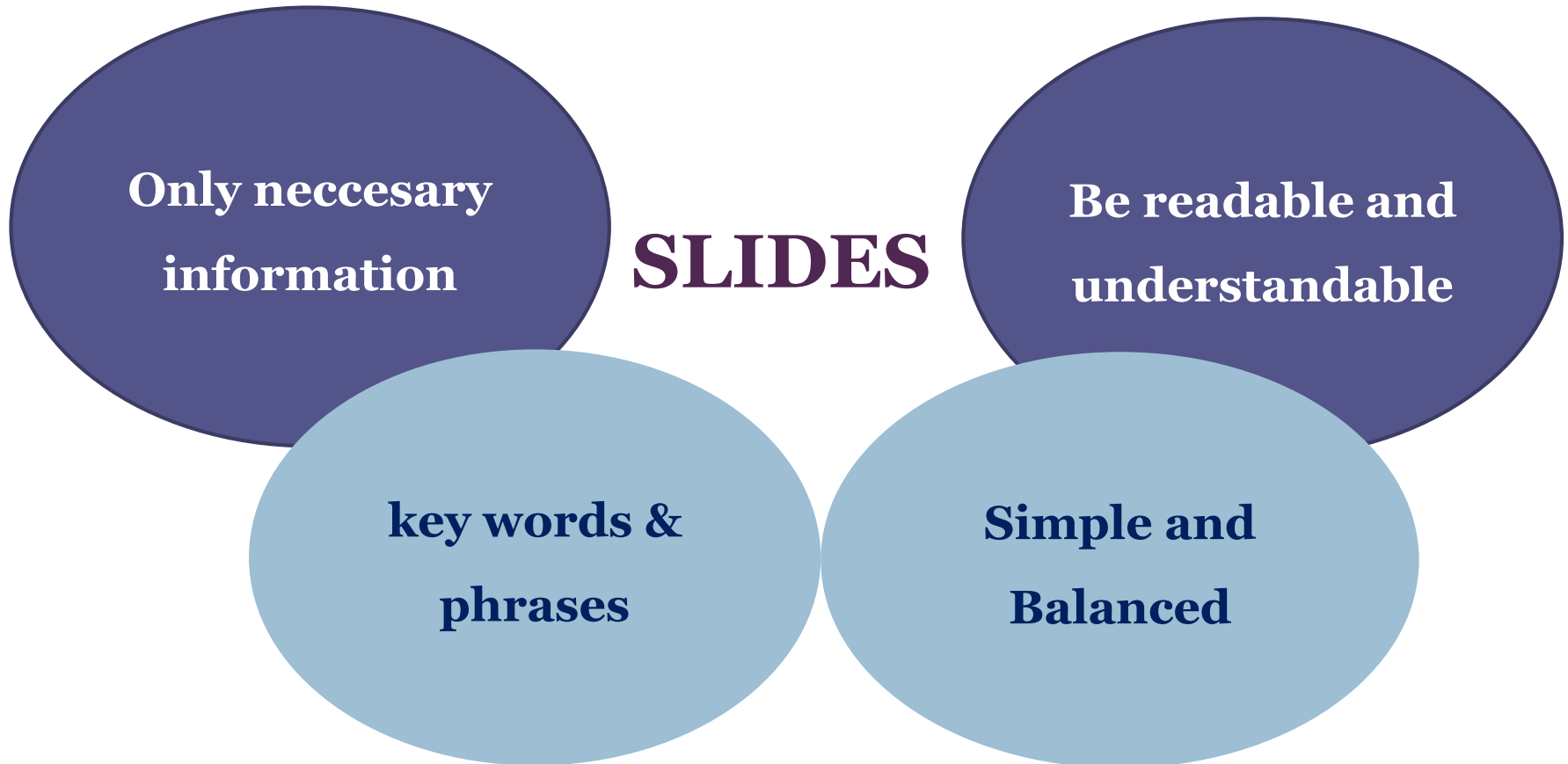


A good presentation



Presentation elaboration

“The slides should enhance the presentation, not be the presentation” (Compton K, 2002)



GENERAL MISTAKES

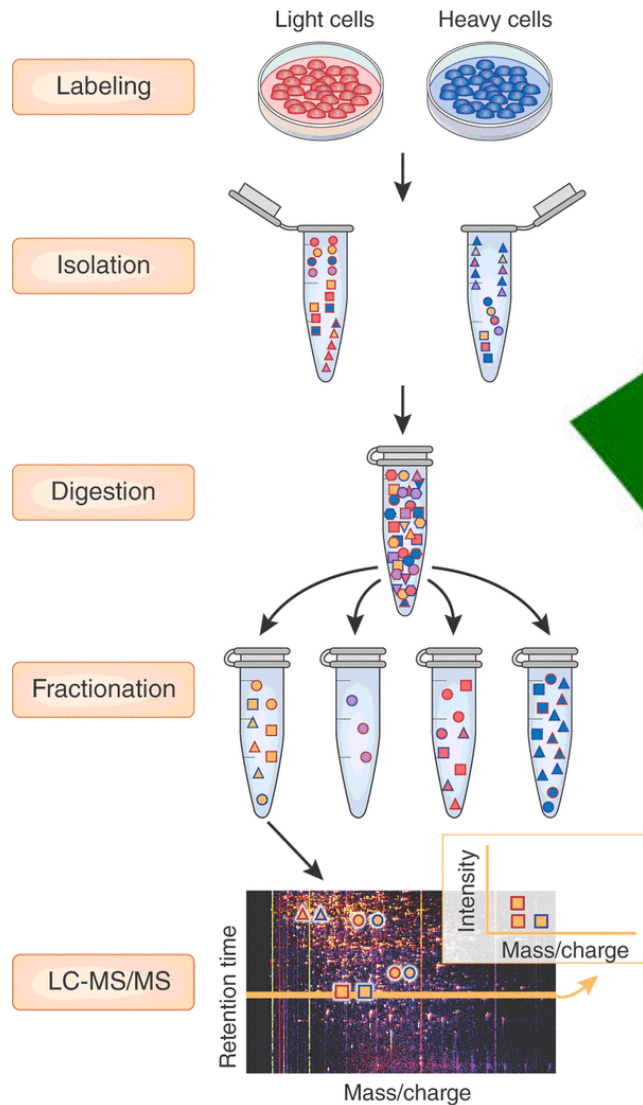


Materials and Methods

- Step 1: A cell extract was prepared by:
 - Centrifuging the cells for 5 minutes at 5,000
 - Washing the pellet twice with 0.85% dH_2O , sterilized by autoclaving
 - Lysing cells by sonication at 100 W power, keeping on ice
 - Pelleting at 10,000 $\times g$ for 10 minutes at 4°C
- Proteins were quantitated by:
 - Addition of 100 μl of 10% TCA in a microfuge tube
 - Incubation of proteins to precipitate for 10 minutes at room temperature
 - Centrifuging 10 minutes at maximum speed (16,000 $\times g$ in microfuge) to pellet proteins
 - Addition of 1 ml of Lowry reagent C (contains Cu_2SO_4) followed by incubation for 10 min at room temperature
 - Addition of 0.1 ml of Folin reagent followed by immediate vortexing
 - Spectrophotometric determination of absorbance at 750 nm

UNREADABLE AND TOO MUCH TEXT

Readable and
understandable



Protein Quantification

- Pellet and wash cells
- Lyse by sonification
- Precipitate proteins with TCA
- Add 10 ul of reagent
- Analyze by LC-MS/MS
-

WACOMA

- The diversity and complexity of these freshwater and coastal systems requires a broad academic platform for an effective interaction between the institutions representing different systems scenarios and management cultures. This initiative of Joint European Erasmus Master in **WATER and COASTAL MANAGEMENT (WACOMA)** has a central focus to integrate the multidisciplinary aquatic, environmental and marine sciences into an advanced teaching program, while promoting an exchange of informations with a direct involvement of the coastal end users and stakeholders.

Font color that does not contrast
with the background is hard to
read

Avoid color for decorating
It is distracting & annoying

USE SIMPLE BACKGROUNDS

Colour

- Use simple backgrounds
- Use color to:
 - Reinforce the logic of your structure
 - Emphasize a point (**occasionally**)
- Use high-contrast fonts and colors
 - Certain colors of text are nearly invisible on some backgrounds

Be readable and understandable

WACOMA



The diversity and complexity of these freshwater and coastal systems requires a broad academic forum for an effective integration between the institutions representing different systems scenarios and management cultures. This joint European Erasmus Mundus Master in **Water and Coastal Management (WACOMA)** has a central focus that integrates a multidisciplinary aquatic, environmental and marine science based teaching program, while promoting an exchange of information with a direct involvement of the coastal end users and stakeholders.

This slide contains too many words for a presentation slide. It is not written in point form, making it difficult both for your audience to read and for you to present each point

WACOMA



- The diversity and complexity of these freshwater and coastal systems requires a broad academic platform for an effective integration between the institutions representing different ecosystems scenarios and management cultures.
- The initiative of Joint European University Centre Mundus Master in **W**ater and **C**oastal **M**anagement has a central focus that integrating the multidisciplinary, aquatic, environmental and marine sciences into an advanced teaching program, while promoting an exchange of informations with a direct involvement of the coastal end users and stakeholders.

Your audience will spend too much time trying to read this paragraph instead of listening to you

WACOMA

Erasmus Mundus Master in **W**ater and **CO**astal **MA**nagement

- The diversity and complexity of these freshwater and coastal systems → **academic platform** for an effective integration between the institutions.
- Aims:
 - Integrating the multidisciplinary aquatic, environmental and marine sciences.
 - Promoting an exchange of information.



**Direct involvement
Coastal Users vs Stakeholders**



TEXT

- Write in point form (bullets)
 - **DO NOT** use sentences or paragraphs.
- Use key words & phrases
 - **Avoid wordiness**
- Simple image on every slide
- Balance of slide elements (Text, graphics)

Don't use *complicated fonts* OR tiny little text

SIZE and FONT

Title: at least 28-point.

Text: at least 18-point

References: 14-point

●Tahoma	●TNR	●Courier	●Comic	●Lucida Sans
●32 pt	●32 pt	●32 pt	●32 pt	●32 pt
●28 pt	●28 pt	●28 pt	●28 pt	●28 pt
●24 pt	●24 pt	●24 pt	●24 pt	●24 pt
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●18 pt	●18 pt	●18 pt	●18 pt	●18 pt
●16 pt	●16 pt	●16 pt	●16 pt	●16 pt
●14 pt	●14 pt	●14 pt	●14 pt	●14 pt
●12 pt	●12 pt	●12 pt	●12 pt	●12 pt
●10 pt	●10 pt	●10 pt	●10 pt	●10 pt

Be sure the text can be read from the back of the room

WACOMA

But USE it when:

- Audience concentrate on what you are saying
- Prevent audience from reading ahead
- Keep your presentation focused

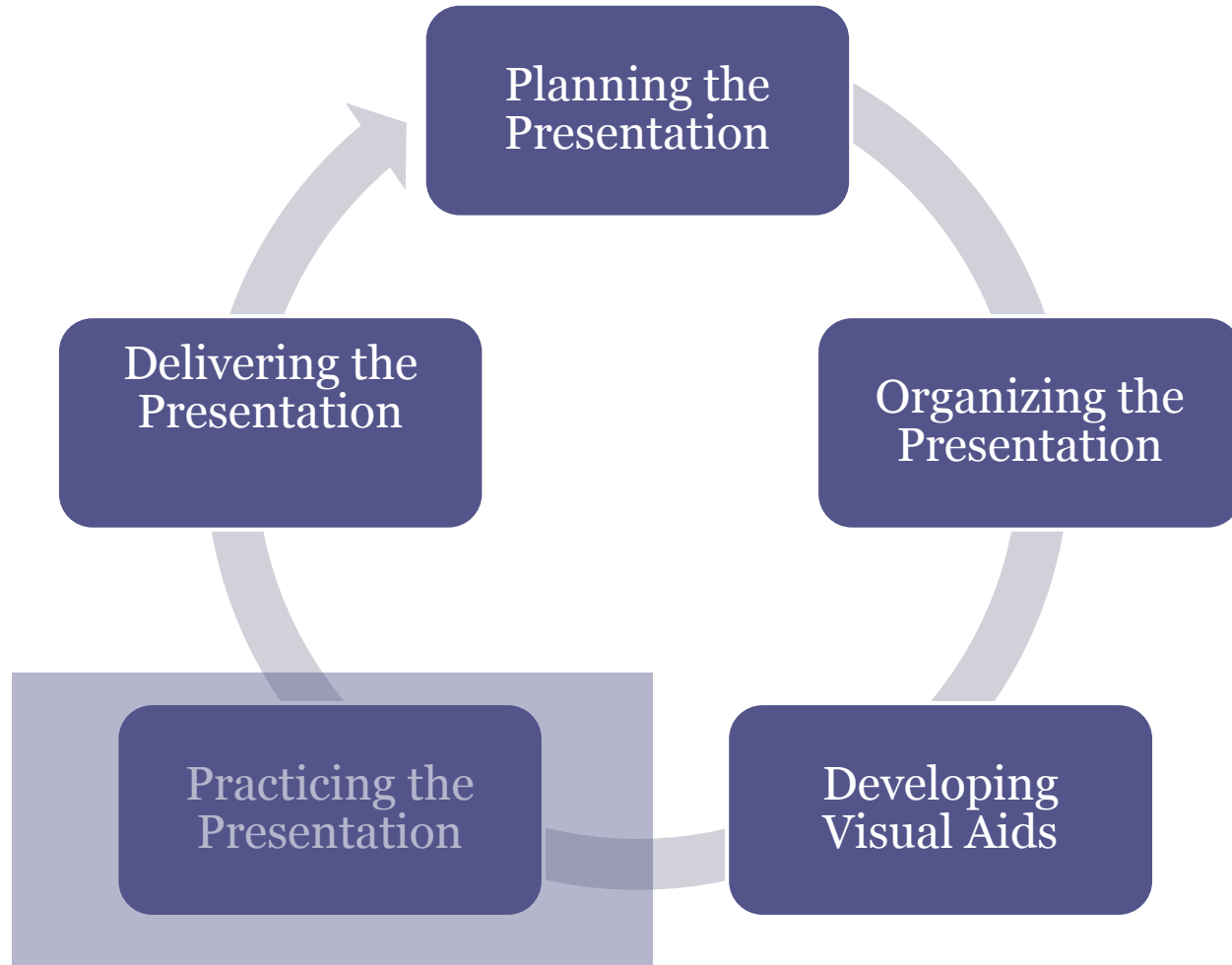
**Do not abuse and overuse
the animation**

Scientific communication skills

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Victoria Manuel Delgado

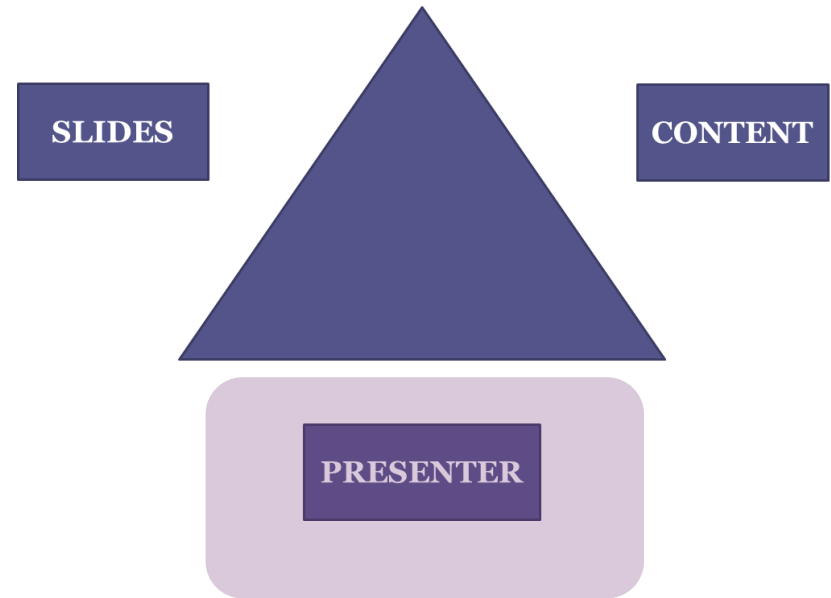
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Practicing the presentation

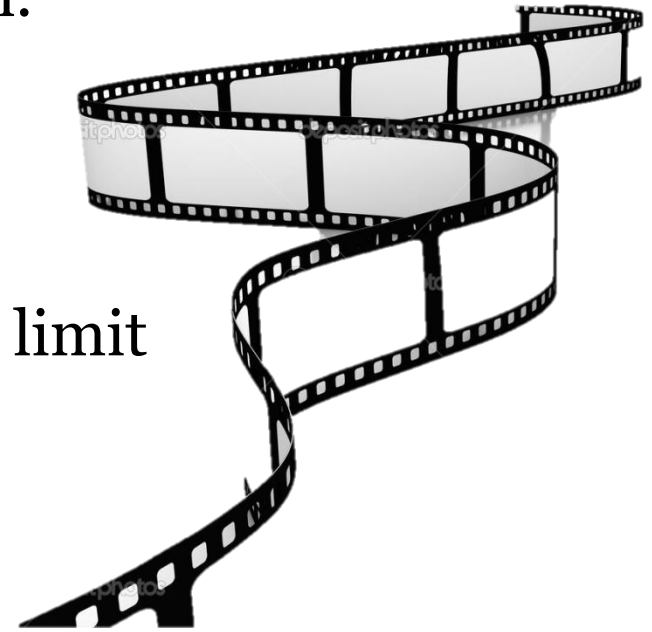
- 1. Timing
- 2. Attention span
- 3. Personal approach
- 4. Practice



Timing

- Do not ramble on during a presentation.
- General rule: One minute per slide.
- When time is allotted do not ignore the limit

The End



The Beginning



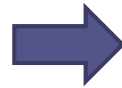
The biggest “sin” is to exceed the given time



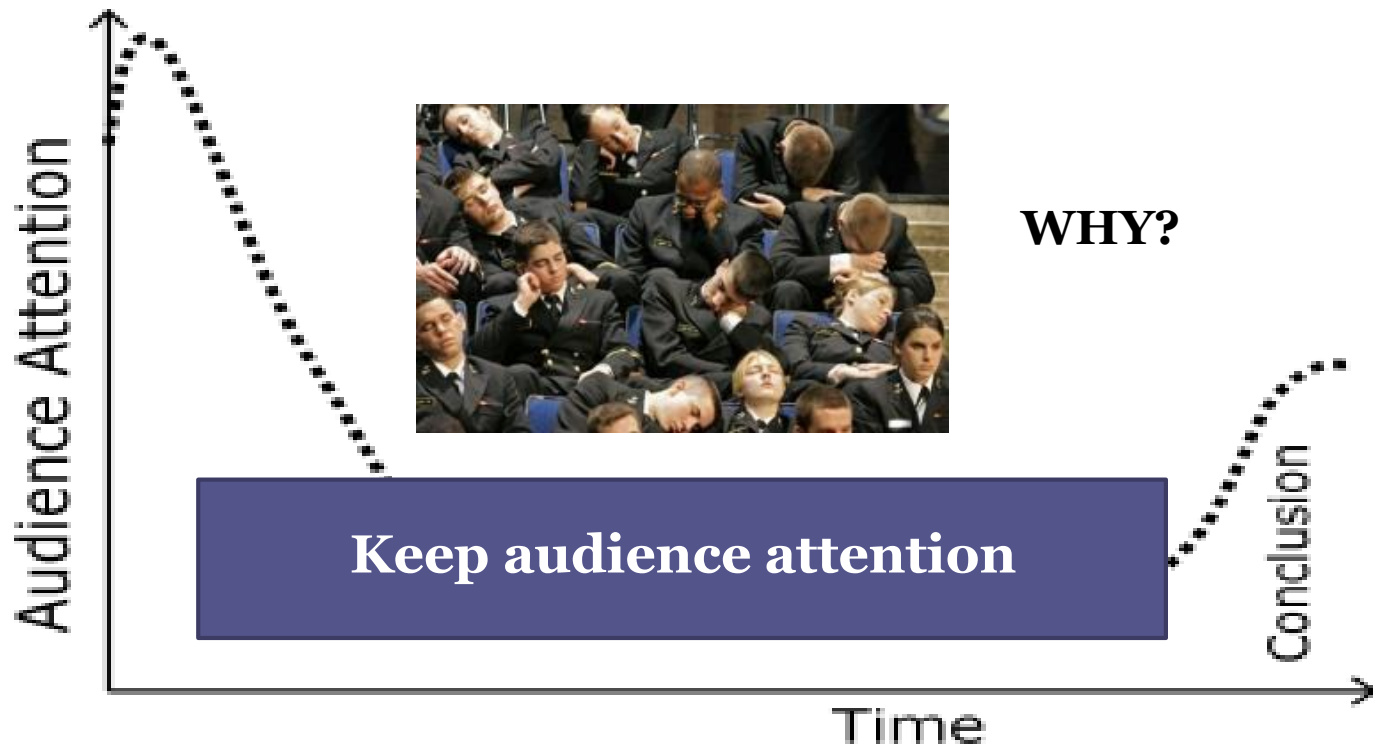
**Good
Structered**

Attention span

Almost everyone
listens in the
beginning

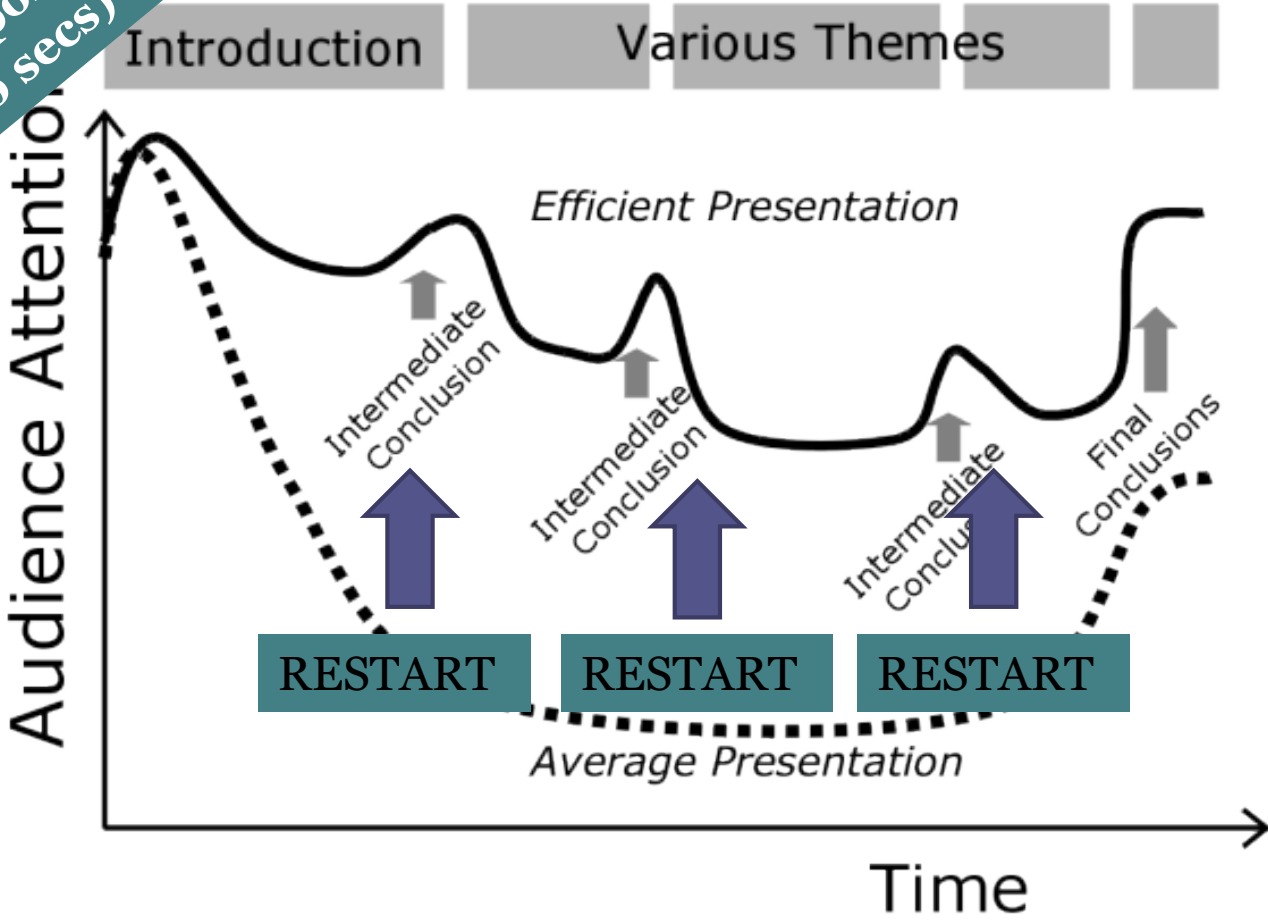


THE MOMENT to make clear that you will present work that the audience cannot afford to miss.



Typical attention span in a 50 min talk

First impressions are important (90 secs)



The message: what people go away with?

Keep audience attention

Source: presentations.catalysis.nl/presentations/presentation.php

Personal approach

- Gesture/body language
- Eye Contact
- Voice
- Breathing

Emphasize ideas
Interact with the audience
Generate interest
Help information retention

Keep audience attention



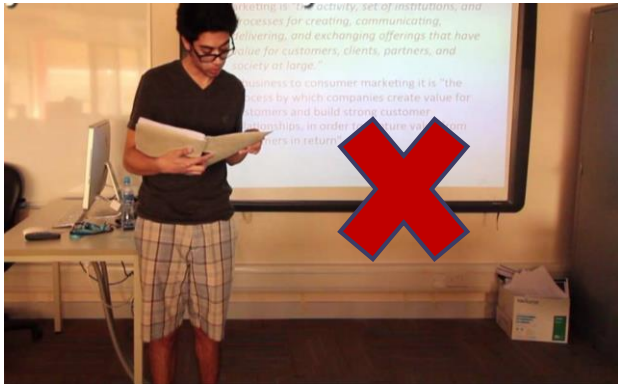
Gesture/body language

Eye Contact

- It is a natural part of communication:
 - to clarify meaning
 - to vent nervousness
 - to maintain interest
 - to emphasize and regulate



- **Gesture/body language**
Eye Contact



• Voice

- To indicate importance
- To create atmosphere and to avoid sounding monotonous
 - Use of proper language (avoid pet words)
 - Clear pronunciation
 - Varying pace and pitch
 - **NOT TOO FAST... NOT TOO SLOW**
 - The tone of your voice, tempo, volume...
 - Modulate your voice evenly
 - **Do be enthusiastic**



If you aren't interested in your topic ...

Can't expect other people to be!

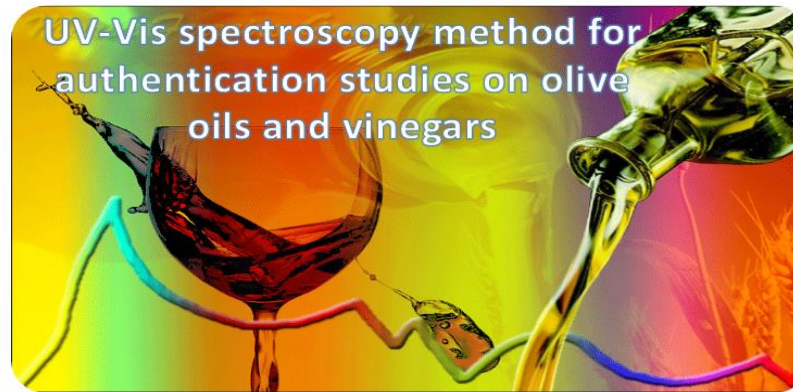
- Practice
- Adequate **rehearsal** is essential for a good presentation.
 - Experience is something that will come in time
 - Self-confidence
 - Practice and **analyze your presentations and those by others**
 - You can record yourself
 - Check your mistakes
 - Pet words
 - Control the time



Master thesis Dissertation



Erasmus Mundus



Marta Ferreiro González

Dr. J. Ángel Álvarez Saura

Dr. Jesús Ayuso Vilacides

Master Thesis Dissertation

Puerto Real, March 2011

- **HOW TO START? Opening**
- **HOW TO FINISH? Ending**

Opening

Common but poor...

“Good morning, ladies and gentlemen. I am and I’d like to tell you something about my Master thesis project at the Group of Marine Sciences at the University of Cádiz. The title of my talk is

I will start with an Introduction, then explain the experimental techniques, next present the most important results, and finally I hope to draw a few conclusions and I want to acknowledge a few people.

So let us start with the Introduction ...”

How would you respond if you were in the audience?

Master Thesis Dissertation:

- **At the start of the talk:** Thank the sponsor, panel...
- **A scientific question?**
- **Maybe even provocative statement?**

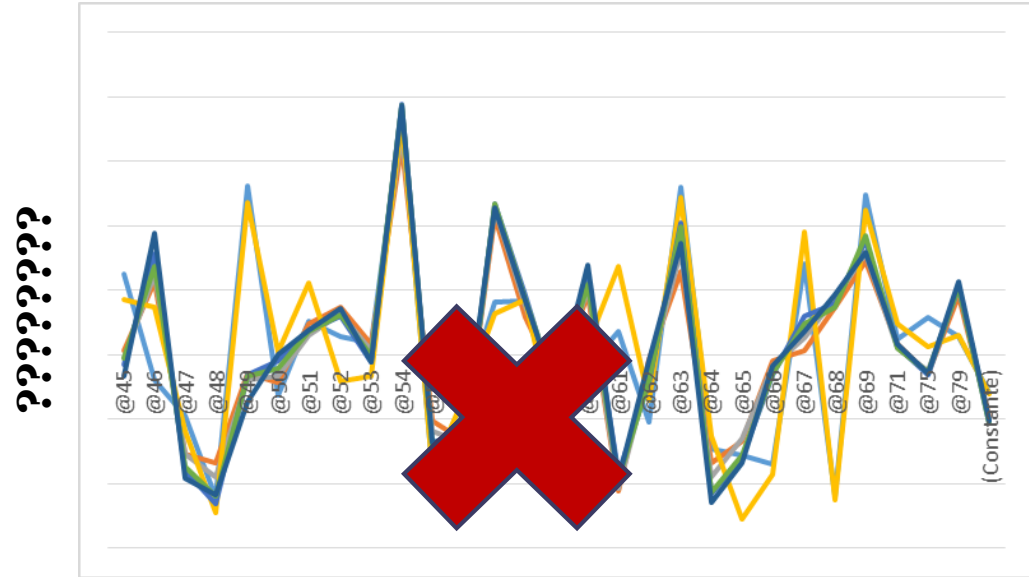
it is good to start with “Mister Chairman, Ladies and Gentlemen ...”

Followed by a few seconds of silence, in which you look around to see if people are paying attention

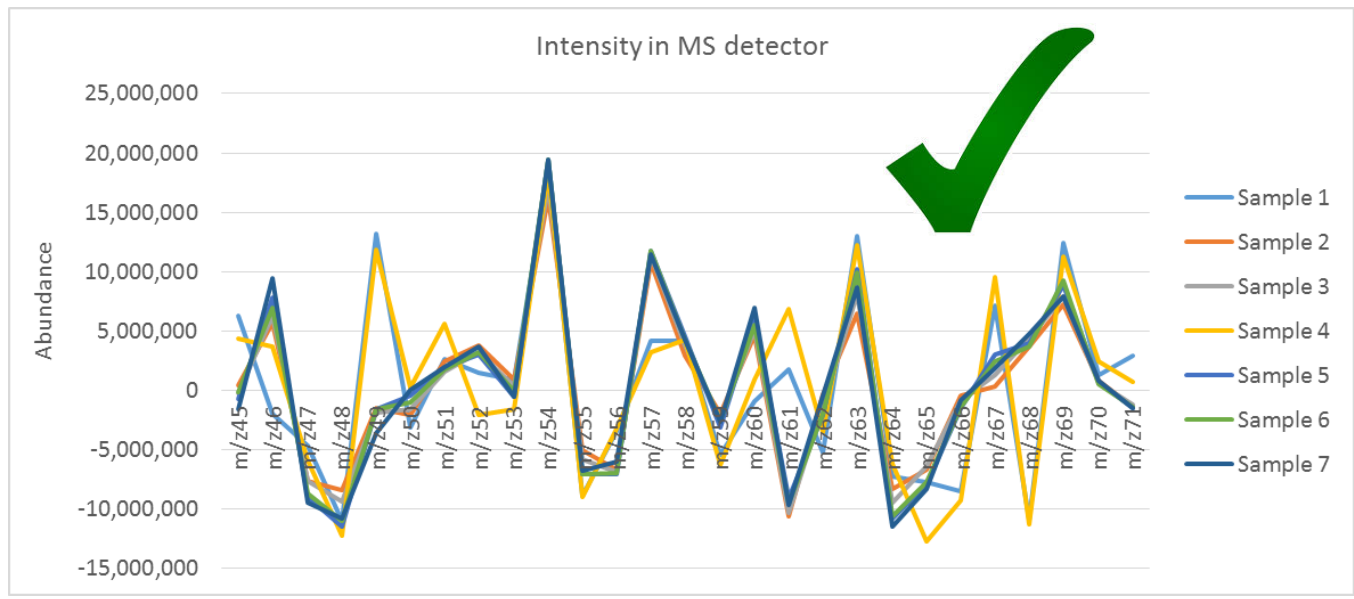
Results and discussion

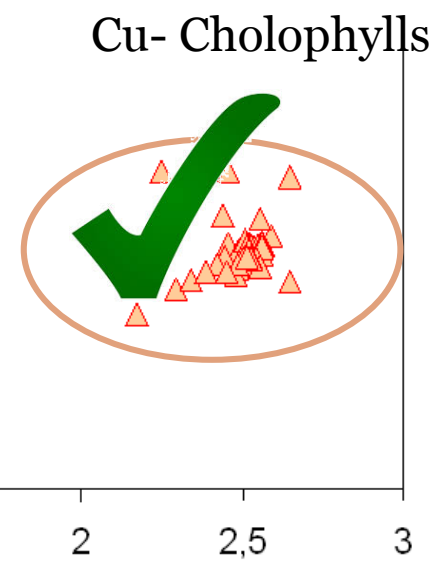
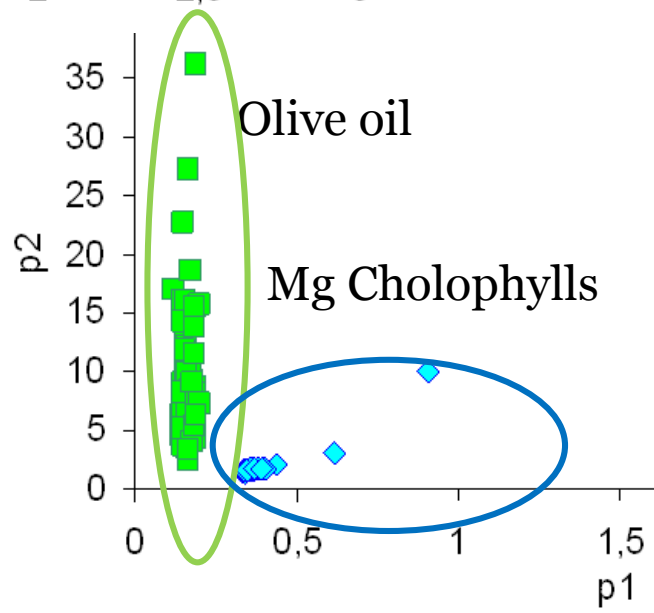
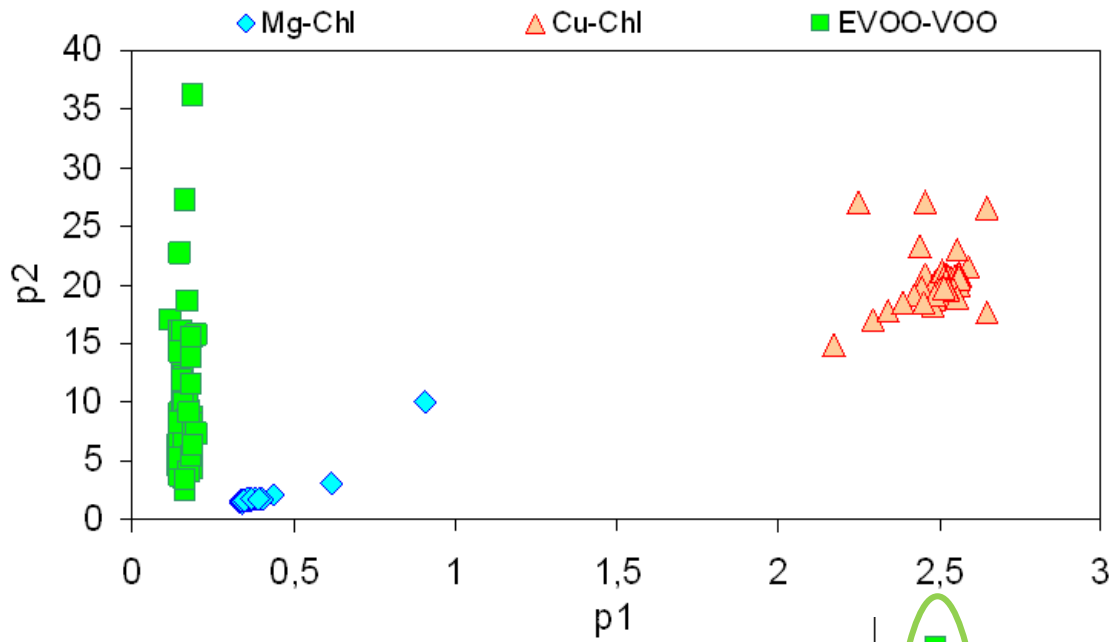
The graphics!!!!

- Readable
- A good figure has labels on the curves and not in a legend
- Secret codes and jargon should be avoided as much as possible



???????





Ending

- Rise attention towards the end
- Summarize main ideas
- You may end with a final sentence that repeats the message of your talk (Take-home message)

- Close by thanking your audience
- You may acknowledge people who helped you (Funding Agencies or Scholarship)

- Invite questions



Be prepared to get questions!!!



- Do not panic! → You are the expert
- Make sure you understand the question
- It's OK to say you do not know, or haven't done the experiment yet
- The three "D"s
 - Defend
 - Deflect
 - Defer



Thank you
Thank you
Thank you

Keep calm and be respectful!

Be prepared for all technology to fail!

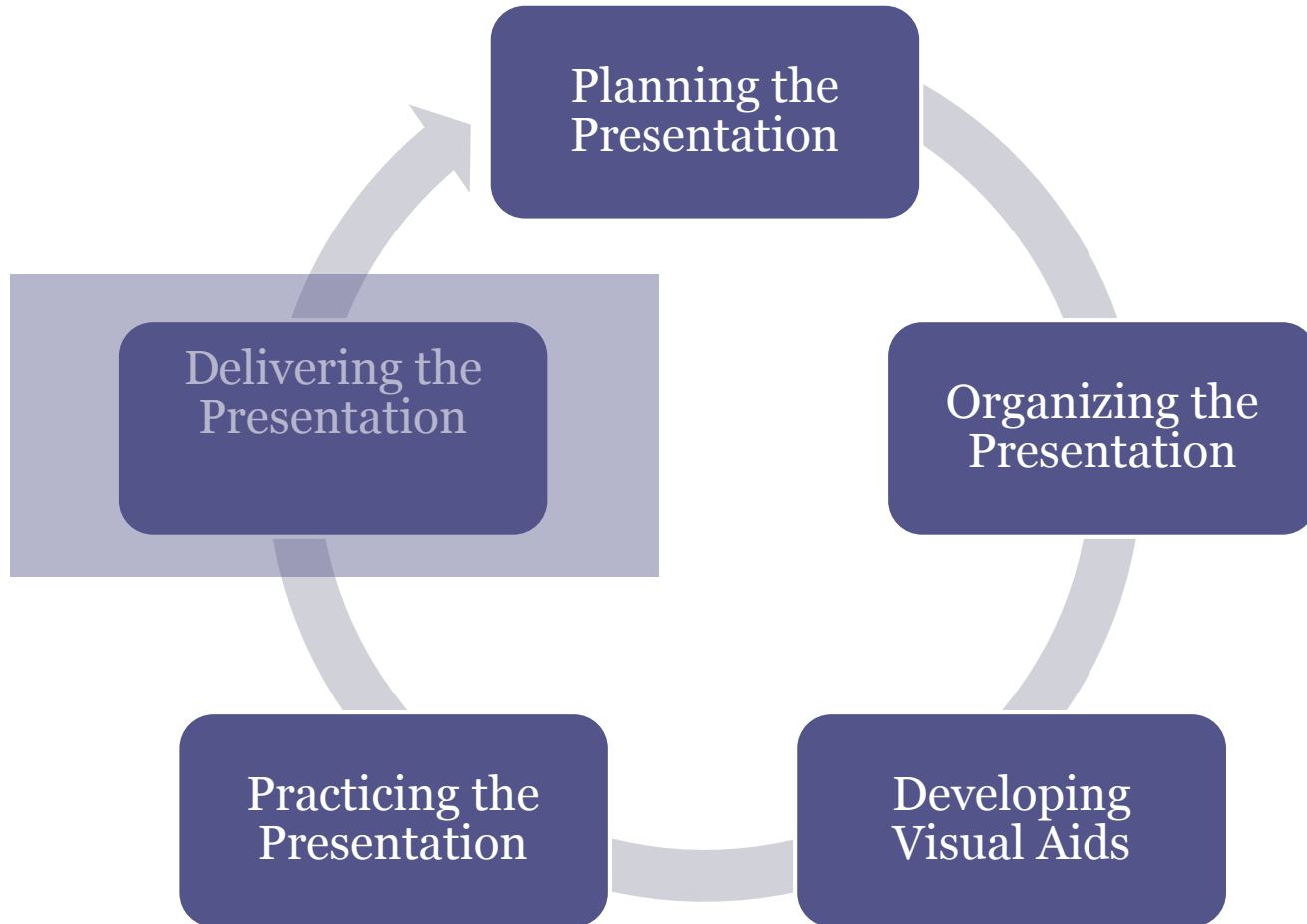
- Check beforehand, the place where you are going to make your presentation
- Know Your **Location**
- Check the podium & AV equipment
- How far is audience from screen?
- Do you need a laser pointer?
 - The situation
 - The computer
 - The slides
 - ...



Develop your own presentation style...
...but avoiding common mistakes



ON FRIDAY



https://www.ted.com/

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11 visions of what tomorrow may bring



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Today's Talk

Steven Wise

Chimps have feelings and thoughts. They should also

The Lady Lifers

A moving song from women in prison for life

Cosmin Mihaiu

Go clean your room

<http://www.catalysiscourse.com/videos3.html>



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