

Technical Writing and Speaking in English

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Goal of the lecture: write short and concise texts

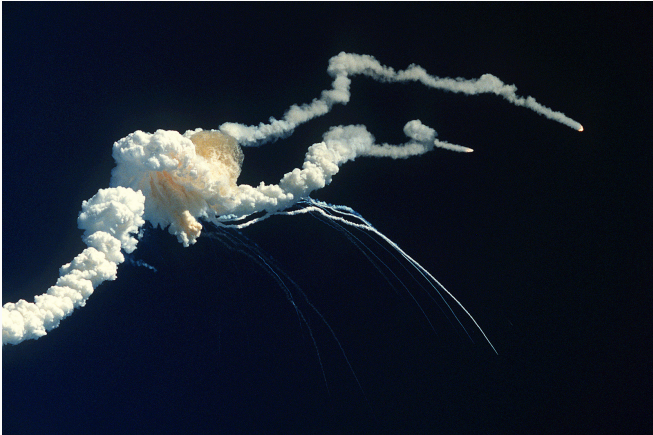
1. **Motivation through a real-life example**
2. Review of the homework text
3. Avoid ambiguity
4. Exercises

Motivation through a real-life example

1996: the Space Shuttle Challenger

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The email's subject which raised the critical problem with the shuttle component:

"Subject: Visit to Precision Rubber Products Corporation and Parker Seal Company"

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Review of the homework text

The main objective of scientific writing is to **be clear!**

Best practices:

- Avoid using words that you are not 100% familiar with.
- Check dictionaries for detailed meaning of synonyms.

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Example using Thesaurus:

classified → secret → mysterious → unidentified → unclassified

Avoid needless complexity!

In a scientific article, we need to find the balance between explaining things clearly and being needlessly too verbose.

The more the reader has to read, the more tired he/she gets.

A great scientist might be a terrible writer...

Example from Neils Bohr: "The Correspondence Principle. So far as the principles of the quantum theory are concerned, the point which has been emphasized hitherto is the radical departure from our usual conceptions of mechanical and electrodynamical phenomena. As I have attempted to show in recent years, it appears possible, however, to adopt a point of view which suggests that the quantum theory may, nevertheless, be regarded as a rational generalization of ordinary conceptions..."

A great scientist might be a terrible writer...

The rewritten version of Michael Alley: "The Correspondence Principle. Many people have stated that the quantum theory is a radical departure from classical mechanics and electrodynamics. However, the quantum theory may be regarded as nothing more than a rational extension of classical concepts..."

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Avoid ambiguity

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Ambiguities arise from four sources:

- word choice
- word order
- pronouns
- punctuation

Example for wrong **word choice**:

The technician wanted to reduce the vibration of the fan at the exhaust **as** the exhaust ducting was cracking.

Example for wrong **word choice**:

The technician wanted to reduce the vibration of the fan at the exhaust **as** the exhaust ducting was cracking.

The technician wanted to reduce the vibration of the fan at the exhaust **because** the exhaust ducting was cracking.

Example for wrong **word order**:

In low water temperatures and high toxicity levels of oil, the technician tested how well the microorganisms survived.

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In low water temperatures and high toxicity levels of oil, the technician tested how well the microorganisms survived.

The technician tested how well the microorganisms survived in low water temperatures and high toxicity levels of oil.

Example for wrong **pronoun** usage:

No peaks occur in the olefinic region. Therefore, no significant concentration of olefinic hydrocarbons exists in fresh oil. **This** places an upper limit on the concentration of olefins - no more than 0.01 percent.

Example for wrong **pronoun** usage:

No peaks occur in the olefinic region. Therefore, no significant concentration of olefinic hydrocarbons exists in fresh oil. **This** places an upper limit on the concentration of olefins - no more than 0.01 percent.

The chromatogram has no peaks in the olefinic region. Therefore, no significant concentration of olefinic hydrocarbons exists in fresh oil. This chromatogram finding places an upper limit on the olefin concentration - no more than 0.01 percent.

Example for wrong **punctuation**:

In our study, we examined neat methanol and ethanol and
methanol and ethanol with 10 percent water.

Example for wrong **punctuation**:

In our study, we examined neat methanol and ethanol and methanol and ethanol with 10 percent water.

In our study, we examined four fuels: neat methanol, neat ethanol, methanol with 10 percent water, and ethanol with 10 percent water.

Key points:

- try to avoid words with several meanings (or clarify which one)
- avoid using *this* and *it* alone
- create sentences which can be read with one pass

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1) Exercise: write an email

Topic:

Write an email to your mathematics professor mentioning that the proof he provided is wrong. Ask for a meeting to discuss your findings. Create the rest of the context yourself (for example, the proof and what is wrong with it).

Instructions:

- work in pairs
- each of you should write the email
- then exchange and give feedback

2) Exercise: short advertisement

Topic:

Write a short (around 1 or 2 minutes long) pitch to popularize train travel over flights.

Instructions:

- work in groups of 4 or 5 people
- each of you should write a short text
- choose the best one in your group
- the author of the best text presents it