• Chapitre 1 : Understanding a scientific text and Give a presentation in English on a scientific topic

Understanding a scientific text requires a structured, non-linear approach, starting with the abstract, introduction, and conclusion to assess relevance. Next, examine the methodology, analyze the results (graphs, tables), and discuss to evaluate the reliability and conclusions of the study.

1. How to read and understand a scientific article

To form a truly educated opinion on a scientific subject, you need to become familiar with current research in that field. And to be able to distinguish between good and bad interpretations of research, you have to be willing and able to read the primary research literature for yourself. Reading and understanding research papers is a skill that every single doctor and scientist has had to learn during graduate school. You can learn it too, but like any skill it takes patience and practice.

In terms of this course, academic English means any English used in formal texts and presentations by students, researchers and teaching staff of any discipline. Scientific English is a subset of academic English, and is the English used by those studying scientific subjects (e.g. chemistry, biology, engineering, mathematics) rather than humanistic subjects such as history or philosophy. In any case, there is no clear distinction and even humanist subjects can be very 'scientific', e.g. the Philosophy of Biology.

1.1.Method of Scientific texts analysis

Advice typically centers around two main tips: read actively and read often. However, active reading, or reading with an intent to understand, is both a learned skill and a level of effort.

Step 01: Fix the goal and aim of reading the scientific text

- The purpose of reading an article will influence your approach of reading it, basing on the goal of reading the text you might line up (prioritize) different sections of the same paper.

- For example, if you are reading an article to learn about a new topic, you might focus on the introduction and conclusion sections. Despite, if you are reading an article to find information for a research paper, you might focus on the methods and results sections.

Step-by-Step Instructions for Reading a Primary Research Article

1.2.Begin by reading the introduction, not the abstract.

The abstract is that dense first paragraph at the very beginning of a paper. In fact, that's often the only part of a paper that many non-scientists read when they're trying to build a scientific argument. (This is a terrible practice. Don't do it.) I always read the abstract last, because it contains a succinct summary of the entire paper, and I'm concerned about inadvertently becoming biased by the authors' interpretation of the results.

1.3. Identify the big question.

Not "What is this paper about?" but "What problem is this entire field trying to solve?" This helps you focus on why this research is being done. Look closely for evidence of agenda-motivated research.

1.4. Summarize the background in five sentences or less.

What work has been done before in this field to answer the big question? What are the limitations of that work? What, according to the authors, needs to be done next? You need to be able to succinctly explain why this research has been done in order to understand it.

1.5. Identify the specific question(s).

What exactly are the authors trying to answer with their research? There may be multiple questions, or just one. Write them down. If it's the kind of research that tests one or more null hypotheses, identify it/them.

1.6. Identify the approach.

What are the authors going to do to answer the specific question(s)?

1.7. Read the methods section.

Draw a diagram for each experiment, showing exactly what the authors did. showing exactly what the authors did. Include as much detail as you need to fully understand the work

1.8. Read the results section.

Write one or more paragraphs to summarize the results for each experiment, each figure, and each table. Don't yet try to decide what the results mean; just write down what they are. You'll often find that results are summarized in the figures and tables. Pay careful attention to them!

You may also need to go to supplementary online information files to find some of the results. Also pay attention to:

• The words "significant" and "non-significant." These have precise statistical meanings.

• Graphs. Do they have error bars on them? For certain types of studies, a lack of confidence intervals is a major red flag.

• The sample size. Has the study been conducted on 10 people, or 10,000 people? For some research purposes a sample size of 10 is sufficient, but for most studies larger is better.

1.9. Read the conclusion/discussion/interpretation section.

What do the authors think the results mean? Do you agree with them? Can you come up with any alternative way of interpreting them? Do the authors identify any weaknesses in their own study? Do you see any that the authors missed? (Don't assume they're infallible!) What do they propose to do as a next step? Do you agree with that?

1.10. Go back to the beginning and read the abstract.

Does it match what the authors said in the paper? Does it fit with your interpretation of the paper?

2. Give a presentation in English on a scientific topic

To give a successful scientific presentation in English, structure your presentation (Introduction, Methods, Results, Discussion, Conclusion) using precise vocabulary, clear linking phrases, and simple visual aids (PowerPoint). Use keywords rather than written sentences, and practice pronouncing technical terms.

For many people, giving a presentation or simply speaking in public is a very stressful task, especially when it involves speaking in English. Lack of confidence, fear of making mistakes, and stress can make this exercise difficult.

To help you better prepare your presentation and succeed in your oral presentation in English, here are some practical tips to improve your organization, oral expression, and ease in front of an audience.

2.1.Preparation

- Your notes
- Avoid writing complete sentences so that you don't read your text during the presentation.
- Use keywords, abbreviations, and symbols.
- Organize your ideas in lists, tables, or mind maps.
- Prepare simple cards to help you follow the thread of your presentation

A. Research and Understanding the Topic

Choose a clear and interesting topic.

Make sure you fully understand the subject.

Select only the most important information.

Prepare examples to explain your ideas.

B. Note-taking

Avoid writing full sentences.

Use keywords, short phrases, and abbreviations.

Organize your ideas using bullet points or mind maps.

Prepare small cue cards if needed.

C. Structure Your Presentation

Your presentation should follow a logical structure:

- Introduction
- Development (main ideas)
- Conclusion

2.2. The Introduction

Your introduction should attract attention and clearly present your topic.

Examples: Hello everyone, my name is … and today I am going to talk about…

My presentation will last about X minutes.

First, I will explain…, then I will talk about…, and finally I will conclude

2.3. Developing Your Ideas

Organize your ideas clearly.
Use connectors: Firstly, secondly, finally Moreover, however, therefore
Give examples: For example… Such as…
Express your opinion : In my opinion… I believe that…

2.4. Language Quality

- Use simple and clear sentences.
- Avoid very long or complicated phrases.
- Use varied vocabulary.
- Repeat key ideas using different words.
- Practice pronunciation before presenting.

2.5.Body Language and Eye Contact

- Stand straight and confident.
- Smile and stay relaxed.
- Look at your audience, not at the floor or your paper.
- Use natural hand gestures.
- Observe audience reactions and adapt your tone.

2.6.COMPOUND NOUNS & ADJECTIVES

In this unit, we look at compound nouns and adjectives. These are groups of two or more nouns or adjectives, which are combined to express a complex single idea. Compounds are widely used in scientific and technological English as they allow new concepts with multiple meanings to be expressed in a concise way.

There are a large number of frequently used formulaic compounds: "Greenhouse effect", "Geneva Peace Conference", "gamma ray detector" but there is no definitive list as combinations are always being "invented" to express new concepts.

There are a large number of frequently used formulaic compounds: Deoxyribonucleic Acid (DNA), Acetyl-Coenzyme A (Acetyl-CoA), Adenosine Triphosphate,... but there is no definitive list as combinations are always being "invented" to express new concepts.

As you know, nouns can be modified in several different ways:

1. ADJECTIVES : A big / a general / a private / a mental... hospital.

2. POSSESSIVE FORMS: A children's hospital.

3. "-ING" PARTICIPLES: A teaching hospital.

4. PAST PARTICIPLES : A well-built / a modernly-equipped ... hospital.

5. Prepositional Phrases: Phrases that start with a preposition and add context.

The substrate binds to the enzyme at the active site.

6. Relative Clauses: Clauses that provide more information about the noun.

Enzymes, which are biological catalysts, speed up chemical reactions in the body

However, it is very important to understand that nouns can also be modified by other **nouns**, i.e. these nouns function as if they were adjectives. These constructions are called **compound nouns**.

- Compound nouns are used to refer to specific, identifiable objects or concepts. They are extremely common in scientific and specialised English because they make it possible for complex notions to be expressed in a concise, elegant way. Compare:

  X-ray therapy *and* ***a therapy using rays which are in the category X***

- Compound nouns are frequently difficult to understand. Why? It is because the order is the **inverse** of what is usual in many languages. This is particularly clearly illustrated by acronyms.

  UNO → ONU (United Nations Organisation)

  NATO → OTAN (North Atlantic Treaty Organisation)

  The reason that the order is inverted is because the **principal** meaning of a compound noun is in the **final** word.

2. Compound adjectives

There are three different forms:

- The **"-ing"** form
  The present participle of the verb can be used as a modifier.

  ➢ *a* ***hard-working*** *student (he/she works hard all the time) • an* ***amplifying*** *system • a* ***warning*** *device • a* ***distinguishing*** *feature …*

This form refers to a typical, defining characteristic.

- The past participle may also be used.

  ➢ *a* ***well-written*** *report (the report was written well* ***by*** *someone) • a* ***well lubricated*** *machine • a* ***pre-tested*** *drug •* ***widely-used*** *techniques …*

This form has usually a **passive** meaning (i.e. you can add "by") and refers to something already done, something in the past.

- A small number of compound adjectives are formed by adding **"-ed"** to a **noun** (the nouns act as if they were verbs).

  ➢ *a cold-****blooded*** *animal • a red-****haired*** *girl • a two-****winged*** *insect • a twin-****engined*** *plane • a 6-****wheeled*** *lorry …*

2.7. Pronouns

There are several types of pronouns. Among them are personal, possessive, demonstrative,

indefinite, reflexive and relative pronouns. Personal pronouns stand in for nouns and noun phrases, and usually refer back in a text or conversation to them.

E.g. Jane is going to watch the parade tomorrow. She plans to leave at 4 pm.

We are collecting old photographs for our project. They should still be in good condition.

Personal pronouns may be categorised as follows:

A. PERSON SINGULAR PLURAL

Subject Object Subject Object

First (person speaking) I me we us

Second (person spoken to) you you you you

Third (person spoken of) He, she, it Him, her, it they them

2.8. Positions of Pronouns in Sentences

a) A pronoun can be the subject of a verb:

E.g. I can't catch the mouse. It moves too quickly. A pronoun can be the object of a verb:

E.g. The flowers look beautiful. Sally arranged them just now.

b) A pronoun can be the object of a preposition:

E.g. I'm going to buy some snacks. Make sure you keep a place for me.