Scientific English course (Ecology and Environment L)

Chapter 01: English scientific writing

1-Sentences:

A sentence (Clause or phrase) is defined as a group of words that makes sense and expresses a complete thought. With at least one subject and one verb, clauses allow us to combine ideas to show their cohesion in speech and writing languages.

1-1-Sentence types:

- **Independent Clause:**

A simple sentence (Main clause) that expresses a complete thought and can be used alone **Examples**:

1. We arrived earlier to the stadium.
2. The mall doesn't open until 9:00 AM.

- **Dependent Clause:**

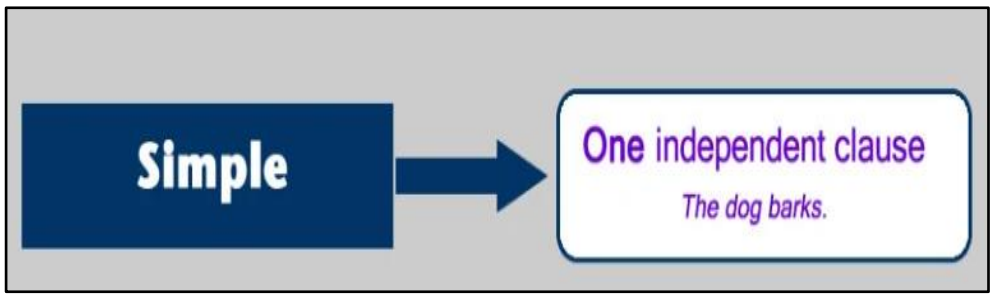
An incomplete thought (Subordinate clause) that cannot stand by itself. A dependent clause is introduced by subordinating conjunction (**after, as, before, if, though, while, whose, unless, although, because, even though, since, when, until, which, so that……),** that connects its different parts in order to complete the meaning. **Examples**.

1. **If** you finish your homework at time, i will take you for a ride.

1-2-Sentence structures:

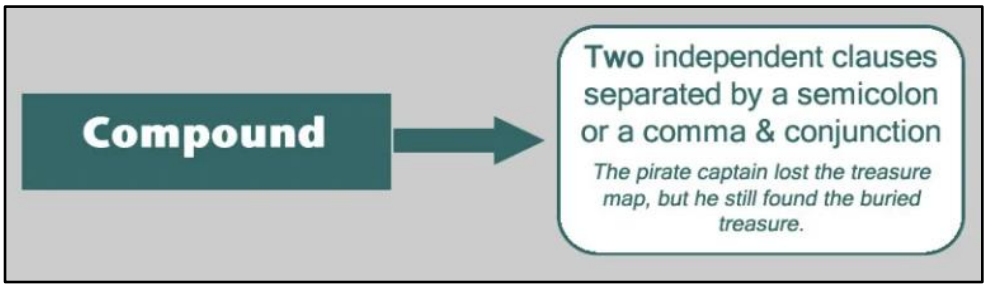
❖ **Simple sentence:**

It contains a subject (a person or thing performing an action) and a predicate (verbal phrase that describes the action) and expresses a complete thought as an independent clause. Simple sentences do not contain dependent or subordinate clauses.



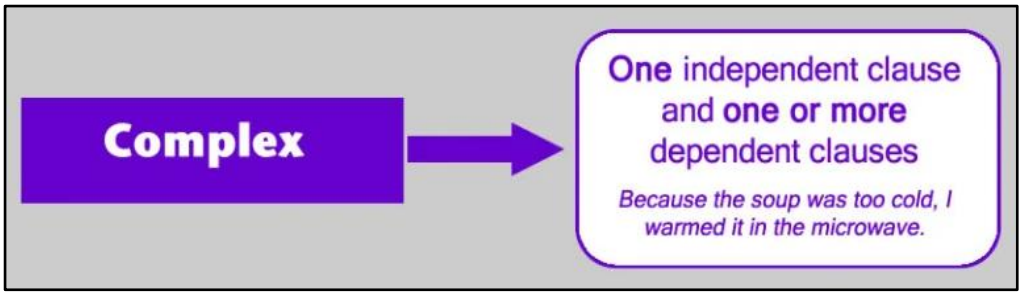
❖ **Compound sentence**:

A sentence that contains at least two independent clauses combined with a comma, a semicolon, or a coordinating conjunction (*and, but, or, nor, for, so, yet*). There are no dependent clauses in a compound sentence.



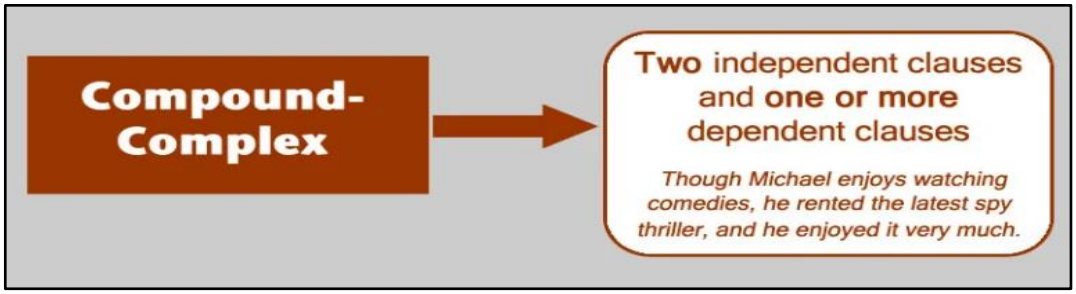
❖ **Complex sentence**:

A sentence with one independent clause, also known as the main clause, and one or more dependent clauses, known as subordinate clauses. When the dependent clause is first in the sentence, a comma will connect the clauses. Other complex sentences link the independent and dependent clauses with subordinating conjunctions like “when,” “how,” and “if.”



❖ **Compound-complex sentence**:

It contains at least three clauses; two independent clauses and one or more dependent clauses; which equates to three sets of subjects and verbs. This type of sentence is a combination of a compound sentence with a complex sentence with a coordinating conjunction, with the comma placed immediately before it.



1-3-Sentence Functions:

There are four types of sentences by function (Meaning) in English language:

Declarative Sentence (statement)

Declarative sentences make a **statement**. They tell us something, give us information and normally end with a full-stop. The usual word order for the declarative sentence is:

- Subject + Verb...

Declarative sentences are the most common type of sentence and can be positive or negative. Examples:

positive	negative
I like coffee.	I do not like coffee.
We watched TV last night.	We did not watch TV last night.

Interrogative Sentence (question)

Interrogative sentences mark a **question**. They ask for information, and always end with a question mark (?). The usual word order for the interrogative sentence is:

- (*wh-word* +) auxiliary + subject +
  ⇩
  verb... (why, who, when….etc)

Interrogative sentences can be positive or negative. Examples:

positive	negative
Do you like coffee?	Don't you like coffee?
Why did you go?	Why didn't you go?

Imperative Sentence (command)

Imperative sentences give a **command**. They tell us to do something, and end with a full-stop or exclamation mark (!). The usual word order for the imperative sentence is:

- Base verb...

Note that there is usually no subject, because the subject is understood, it is *YOU*. Imperative sentences give an order and can be positive or negative. Examples:

positive	negative
Stop!	Do not stop!
Give her coffee.	Don't give her coffee.

Exclamative Sentence (exclamation)

Exclamative sentences express strong emotion, an exclamation**,** and always end with an exclamation mark (!). The usual word order for the exclamative sentence is:

- *What* (+ adjective) + noun + subject + verb
- *How* (+ adjective/adverb) + subject + verb

Examples:

form	function	example
How!	make an exclamation	How silly I am.
What!		What a great car you have!

1-4- Scientific Terminology:

Scientific terminology is the part of the language used by scientists in the context of their professional activities. While studying nature, scientists often encounter or create new material or immaterial objects and concepts and are compelled to name them. Many of those names are known only to professionals. However, due to popularization of science, they gradually become part of common languages. Several categories of scientific terminology can be distinguished. Among them, biological terminology is practiced when we learn about animals, plants, cells, or natural ecosystems, in order to set terms used for each province of this domain and for better understanding and more accurate network between all biologists of the life sciences. The language of biology is rigorous and most of the words can be broken into parts using their root words and by utilizing their prefixes and suffixes.

COMMON BIOLOGY WORDS

Gene	Nucleic acid	Carbohydrates	Genus
Coenzyme	Crossing-over	Catabolism	Family
Genetic	Amino acid	Response	Order
Polypeptides	Class	Compound	Phylum
Ion	Control	Photosynthesis	Cellulose
Solution	Molecule	Cell wall	Biosphere
Fungi	Tree	Blood	Niche
Nucleus	Phenotype	Heredity	Biologist
Abiotic	Lipids	Autotrophs	Tissue
Extinct	Metabolism	DNA	Ecosystem
Unicellular	Transcription	Phenotype	Ecology
Ribosome	Ionic bonds	Carnivore	Organism
Genotype	Anabolism	RNA	Mutation
Element	Translocation	Cloning	Clone
Multicellular	Isomers	Evolve	Biotic

2-Scientific paragraphs:

One of the most important goals in scientific writing is communicating complex ideas clearly. Preparing a strong structural English paper means that the reader can get a clear idea of where the argument is going, merely by skimming down the first line of each paragraph. For this, we have to:

A- Construct strong, clear topic sentences:

- Try to keep topic sentences simple.
- As a general rule, topic sentences should be clear enough that a reader can get the gist of your paper just by reading the first sentences of each paragraph.
- The topic sentence should identify the main point of your paragraph.
- Once you've written your paragraph, it's helpful to go back and check the meaning and the language.

B-Each paragraph should make one main point:

- In general, try to keep paragraphs between 3 and 5 sentences.
- If your paragraph is getting too long, it is probably making more than one main point, and it may be time to break it into two different topics.
- Connect your paragraphs with each other to achieve a coherent paragraph structure in your research paper.

C- Placing old information first and new information last:

Example:

Farmers had been trying for the last years to provide optimal growing conditions for crops (Old information), by using soil additives as agricultural limestone in order to adjust the pH level (New information)

D- Use an active voice:

- A passive voice can make your writing sound vague and unclear, whereas an active voice provides a clear subject and verb, making your sentences more direct.
- Use strong verbs such as "discovered", "measured", and "analyzed" rather than verb phrases using forms of "to be" such as "is", "are", "was", and "were".

E-Be analytical and critical at each part:

- Try to analyze and support each idea with evidence
- Give your opinion, and make sure you link your analysis back to the question at hand

3-Scientific article

A scientific article is a publication that supports a specific hypothesis and by which scientists communicate a significant portion of their experimentation. The scientific article must follow a uniformed structure with different parts that help readers to find expected information and analysis:

3-1-Structure of a scientific article:

Most journals use a conventional IMRD structure:

1. Title

2. Abstract

3. keywords

4. Introduction

5. Methods

6. Results

7. Discussion

8. References

1. **Title**

The title should reflect the topic to be presented in the scientific text and the scope of the paper. It should be very limited and specific in order to translate the clear information developed. Name and affiliation of authors must be placed under the title.

2. **Abstract**

A brief summary of the purpose that represents what the study is about and explains why it matters. It should provide a sentence or two of the study's background, a brief overview of the basic methods used, a summary of results, and a part interpretation of the data. In general, abstracts consist of only one paragraph with about 50-100 words that should globally state the goals and the main conclusions of the scientific experimentation.

3. **keywords**

A list a few words or phrases placed at the end of the abstract, which indicates the most important scientific concepts and terms in the abstract.

4. **Introduction**

This is where the authors sketch out the background of the study and explain the objectives of their investigation. It is important to have enough citations to develop and provide the arguments leading to the hypotheses tested. The introduction section is a historical study including previous research relevant to the problem and gradually narrows to the specific topic addressed by the report

5. **Methods**

This section describes what, when and how it is done from the site study location and the numbers of organisms used to the equipment, the procedures and all the techniques applied. Every chemical reaction, experimental design, statistical method and program must also be identified.

6. **Results**

In this section, simply results of the investigation are reported without long interpretation or elaboration. They must be organized into tables and figures with essential statistical information in order to be understood and compared. Tables and figures must be located after the text in which they are introduced. They must also be accompanied with a brief legend.

7. **Discussion**

This section discusses the results and comments on whether the argument research supports the original hypotheses or answers the research questions. During this section, the authors are asked to examine the results in the context of other published studies. It is important to explain how the study adds to or supports, existing knowledge. It's also important to mention future prospects in order to continue deeper researches in the studied domain.

8. **References**

The Bibliography section present all the references used in the paper for the different sections. It lists and indicates information and details concerning the sources used in the article. Most journals require authors to follow the journals' Instructions and to be up to date to recent issues of the journal.

4-Plagiarism:

Plagiarism is a form of academic misconduct in which the authors represent someone else's phrases as their own. It is acceptable to incorporate someone else's idea in your paper only if you clearly indicate that the words are someone else's and this by putting them in quotation marks and citing the source (s). Plagiarism can be detected on two forms:

- Plagiarism of words: when authors present someone else's exact words as if they were their words without quotation marks or documentation.
- Plagiarism of ideas: If the authors put someone else's ideas into their own words and then present the ideas as theirs.
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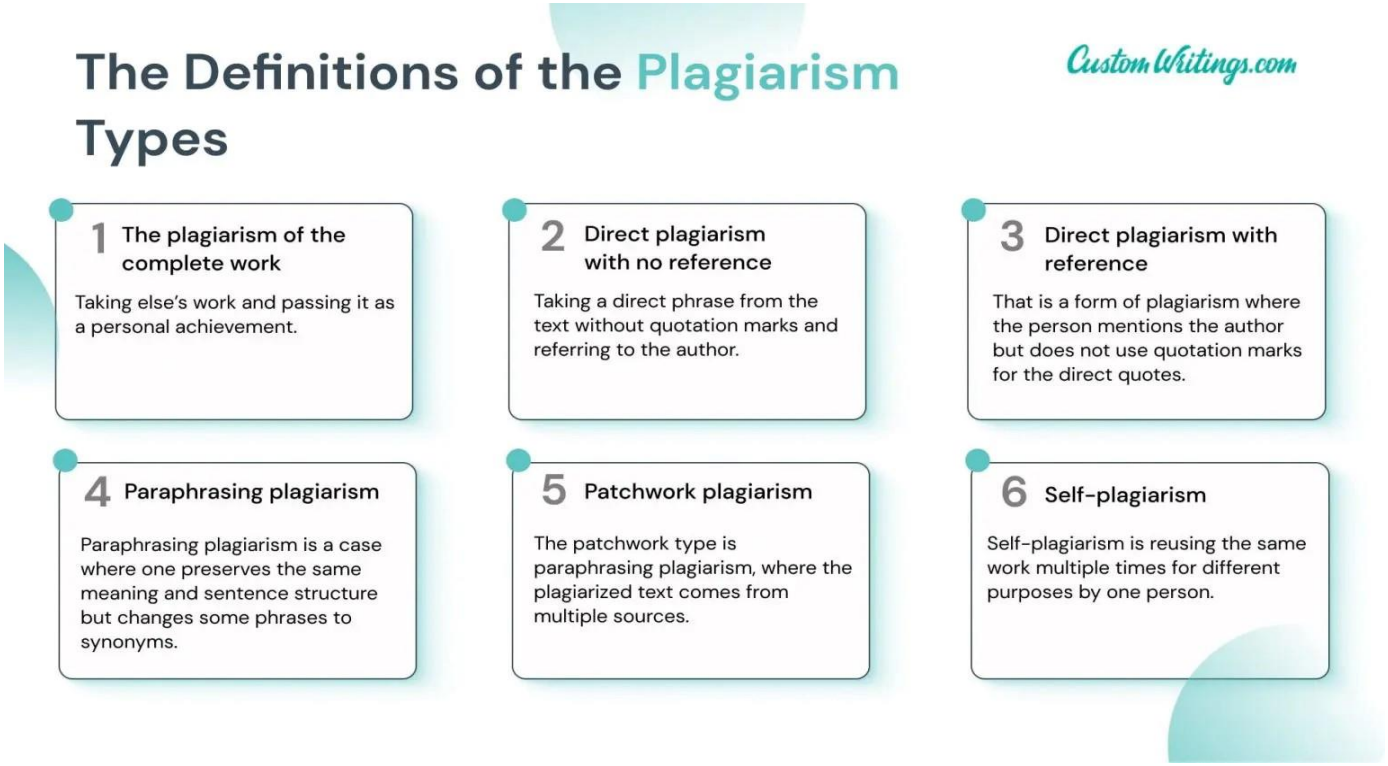
4-1- Plagiarism types:

Plagiarism comes in many forms. These are the most common:



4-2-How do I avoid plagiarism?

The following simple three rules are effective to help any scientific writer to avoid plagiarism and use bibliography study correctly:

- Think. Think about your paper topic and the research you have done. Make sure you have actually thought about everything in your paper well enough to explain it in your own words.
- Write. Generate your own words to express your own understanding. Other people's words should always be a supplement, not a substitute, for your own writing.
- Signal. Clearly signal whenever you are using someone else's words, whether you are using them by direct quotation or paraphrase. Any direct quotation must be indicated by two things: quotation marks and a reference to the source.