

## **Chap 2 : Scientific Writing in English : (write a text analysis in scientific English )**

### **Introduction**

#### **1. Good Writing Is Difficult**

As a young scientist, researcher, or PhD student, you are convinced at the beginning of your career that the essential part of research work consists of carrying out experiments and obtaining “good” results.

A so-called research article is in fact a paper that presents a new aspect in relation to current knowledge. You are also mistaken in thinking that your weakness in English is merely a translation problem.

This course has been specifically designed for writing research articles, also called “primary” or “original” articles. Nevertheless, the principles and advice provided here apply to most scientific documents. Although the diversity of scientific document formats is very wide (Table I), they all share the same objective: to communicate quickly and effectively a novelty that distinguishes itself from existing knowledge — that is, an innovation, a theoretical or practical advance, an invention, or a difference demonstrating added value.

#### **2. What Is a Scientific Article?**

But what does “scientific” article really mean? It is a published, relatively concise text that reports on research in a specific field and on a precise topic. Moreover, the author’s reflections do not express an established truth but rather knowledge in the process of being constructed. It therefore highlights emerging questions — generally in the form of a research problem — and possible lines of response.

In addition : it is evaluated and validated, prior to publication, by a peer-review committee or a panel of experts; it is published in a specialized journal, in conference or congress proceedings, or in a collective volume; it originates from a specialist or expert recognized by their peers;

it is addressed to specialists (e.g., researchers, university professors) or future specialists (e.g., students); it most often has an argumentative or demonstrative dimension.

### **3. Why Do We Write Scientific Papers?**

Scientific writing is an essential part of research. Scientists conduct experiments and obtain results, but these results become valuable only when they are communicated to the scientific community. Writing scientific papers allows researchers to share their discoveries, contribute to knowledge, and advance science.

#### **3.1.. To Communicate Research Findings**

One of the main reasons for writing scientific papers is to communicate research results. Scientists work in different laboratories, universities, and countries. By publishing their findings, they allow other researchers to understand what has been discovered.

##### **Scientific papers explain:**

The research question

The methods used

The results obtained

The interpretation of these results

This communication allows other scientists to learn from the work and build on it.

#### **3.2. To Let Others Know About Our Work**

Research requires a lot of time, effort, and resources. Publishing a scientific paper allows researchers to present their work to the scientific community.

Through publication :

- other scientists can read and evaluate the research
- The work becomes part of the scientific literature (research gate)
- researchers gain recognition for their contributions
- Without publication, scientific discoveries would remain unknown

#### **3.3. To Increase the Body of Scientific Knowledge**

Science progresses through the accumulation of knowledge. Each scientific paper adds new information to the existing body of knowledge.

When scientists publish their work:

- they provide new data
- they confirm or challenge previous studies
- they propose new theories or explanations

This process helps science evolve and leads to new discoveries and innovations.

### **3.4. To Benefit Humanity**

Scientific research often aims to solve real-world problems. Publishing research results allows discoveries to be used for the benefit of society.

For example, scientific papers contribute to:

- The development of new medicines
- improvements in healthcare
- environmental protection
- technological advancements

Therefore, scientific communication plays an important role in improving human life.

### **3.5. Academic and Professional Advancement**

Writing scientific papers is also important for academic careers. Researchers and students often need publications to :

- complete their graduate studies
- obtain a master's or doctoral degree
- apply for academic positions
- gain research funding

Publications demonstrate a researcher's ability to conduct and communicate scientific work.

## **4. Features of scientific text**

Scientific text is characterized by clarity, accuracy, objectivity, and a formal tone, designed to communicate research findings efficiently. It relies on precise technical vocabulary, logical structure (often IMRAD: Introduction, Methods, Results, and Discussion), evidence-based arguments, and visual aids like graphs and diagrams to present data.

**Key features include:**

- **Objectivity & Impartiality:** Focuses on facts, data, and evidence-based arguments rather than personal opinions or emotions.
- **Precision & Clarity:** Uses specific language to avoid ambiguity, minimizing vague terms.
- **Structured Organization:** Follows a logical, predetermined format (e.g., IMRAD) to make information easy to navigate.
- **Specialized Vocabulary:** Employs domain-specific terminology (jargon) necessary for accurate communication.
- **Formal Tone & Passive Voice:** Often uses formal language and passive voice to emphasize the process or result rather than the researcher.
- **Evidence-Based:** Conclusions are supported by data, research, and citations of previous work to avoid plagiarism.
- **Visual Elements:** Integrates graphs, tables, and diagrams to illustrate complex data.

**4.1. Broad Information Categories**

<p><b>Qualitative Information</b></p> <p>It refers to content that is often used to describe the results obtained in a scientific study. Descriptive text is often used to summarize the data that has been garnered.</p>	<p><b>Quantitative Information</b></p> <p>It refers to data that is expressible in terms of quantity-how much, how long, what percentage etc.</p>	<p><b>Inferential Information</b></p> <p>Use of statistical techniques to make judgements about the data that was obtained.</p>
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**5. Impersonal forms in scientific writing :**

such as the passive voice (35/100 of verbs), "it"-clauses, and nominalizations, prioritize objective actions over the researcher. By removing personal pronouns ("I", "we", "you"), these forms enhance credibility and focus attention on methods and results rather than the actor.

- **Passive Voice:** Emphasizes the action and result over who performed it (e.g., "The samples were heated" instead of "We heated the samples").
- **Impersonal "It" constructions:** Used for reporting beliefs or findings neutrally (e.g., "It was discovered that...", "It is suggested that...").
- **Nominalization:** Turning verbs into nouns to make the text more formal and concise (e.g., "The analysis of the data was conducted" instead of "We analyzed the data").
- **"There is" / "There are":** Used to introduce findings or existence of items (e.g., "There were significant differences...").
- **Focus on the Subject/Evidence:** Rather than personal opinions, sentences often start with the evidence itself (e.g., "The data suggests..." or "The study shows...").

**Activity one :**

**The Grammar of Impersonal Style:** the passive voice.

One way of sounding impersonal and objective is to use the passive voice and omit reference to yourself.

Passive voice is frequently used in academic writing when we are more interested in events and processes than in the 'doer' of an action. For example:

➤ **when reporting what you did:**

We cut a segment out of the apple and placed it in an agar solution.

A segment ..... out of the apple and placed in an agar solution.

➤ **when referring to what you have said:**

Dr J. is an acupuncturist, which I have mentioned already, so many patients come for this sort of treatment.

As ..... already, Dr L. is an acupuncturist, so many patients..

**Table 1. Active voice and passive equivalents in different tenses.**

<u>Tense/verb form</u>	<u>Active voice</u>	<u>Passive voice</u>
Simple present	keeps	is kept
Present continuous	is keeping	is being kept
Simple past	kept	was kept
Past continuous	was keeping	was being kept
Present perfect	has kept	has been kept
Past perfect	had kept	had been kept
Future	will keep	will be kept
Conditional	would keep	would be kept
Perfect conditional	would have kept	would have been kept
Present infinitive	to keep	to be kept

## **Exercise 2**

Here is some additional practice in transforming active clauses to passive ones. Be careful to use the same tense as in the active sentence.

1. We should examine the statistics more carefully before we dismiss this claim.  
(Omit 'we')
2. We heat the premises by electricity. (Omit 'we')
3. In some districts farmers use pigs to find truffles.
4. They are excavating additional sites. (Omit 'they')
5. Why didn't they use a control group? (Omit 'they')
6. They have disregarded all the evidence in the new report. (Omit 'they')

## **Exercise 3 : identify all the impersonam forms in the text**

The effect of temperature on enzyme activity was investigated in this experiment. It is well known that enzymes are sensitive to temperature changes. The solution was heated gradually from 20°C to 60°C. It was observed that the reaction rate increased with temperature up to a certain point. However, it was also noted that high temperatures caused a decrease in enzyme activity.

There are several factors that can influence enzyme function, including pH and substrate concentration. It is important to control these variables during the experiment. The pH was measured using a digital pH meter, and the results were recorded carefully. It is believed that extreme pH levels can denature the enzyme.

At the end of the experiment, it was concluded that enzyme activity depends strongly on temperature. It is recommended to repeat the experiment to confirm the results.