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CHARACTERISTICS OF SCIENTIFIC TEXT

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For Second Year Student License
Technology

CHAPTER IV

CHARACTERISTICS OF SCIENTIFIC TEXT

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IV-1- What are scientific texts?

A scientific text is one that disseminates the results and findings of an investigation and represents a contribution or novelty for the subject. The author must be a researcher who addresses a specialized audience (such as the scientific community), so they can use technical and formal language.

A scientific text differs from a *popular science article* in that the latter has the purpose of adapting specialized knowledge and technical language, so that they can be understood by the general public that is not an expert on the subject. The scientific text, on the other hand, is not addressed to the general public but rather to an expert or knowledgeable reader on the subject.

IV-2- Characteristics of good scientific writing:

Good scientific writing is:

a/ Clear : it avoids unnecessary detail;

b/ Simple : it uses direct language, avoiding vague or complicated sentences. Technical terms and jargon are used only when they are necessary for accuracy;

c/ Impartial : it avoids making assumptions (Everyone knows that ...) and unproven statements (It can never be proved that ...). It presents how and where data were collected and supports its conclusions with evidence;

d/ Structured logically : ideas and processes are expressed in a logical order. The text is divided into sections with clear headings;

e/ Accurate : it avoids vague and ambiguous language such as about, approximately, almost;

f/ Objective : statements and ideas are supported by appropriate evidence that demonstrates how conclusions have been drawn as well as acknowledging the work of others.

IV-3- Structure of a scientific text:

A scientific text is prepared using the following structure:

- **A defined goal:** The reason why a topic is exposed through a scientific article must be clear and specific. The purpose of the article should be to communicate a new contribution or discovery.

- **A title:** The objective of the topic to be presented must be included in the headline, which must be written in English and in the language of the author (in case it differs).
- **The publication magazine:** The name and publication data of the specialized journal in which the article was previously published must be mentioned after the headline.
- **The author's name:** The author(s) and potential contributors should be listed below the editorial publication details.
- **The summary:** The synthesis of the article must be explained both in English and in the author's language and must mention the objectives, methods used for the investigation, results and conclusion.
- **The keywords:** The summary ends with some words that work as guides to quickly and clearly deduce the essential points of the investigation.
- **The body of the article:** The development of the text consists of the complete detail organized in parts, such as the introduction, the development of the methods applied in the investigation (includes the use of graphs and tables), the results and the conclusion.
- **The sources:** Both the bibliography and the other specialized resources that were consulted for the research should be cited at the end of the article.

IV-4- Importance of scientific endorsement:

Scientific texts are important to endorse and disseminate research carried out by specialists. A scientific text that achieved dissemination previously had to go through exhaustive review methods through different scientific committees.

The media that communicate a scientific text endorsed by a committee must not be susceptible to any type of manipulation, such as alluding to personal opinions or partially communicating the results of the investigations. The purpose of the evidence disseminated must be to reveal the truth and not to justify an investigator, sponsor or State.

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IV-5- Summarizing a Scientific Text:

Summarizing a short scientific text in **one paragraph**:

A summary is a shortened version of a longer piece of writing. It captures all the most important parts (main ideas) of the original, but expresses them in a shorter way. Then, it should be expressed--as far as possible--in your own words.

To have a coherent summary of a scientific text, you should follow some reading strategies;

Reading strategies:

- Read the original **quickly**, and try to understand its main subject or purpose.
- Read it **again** to understand it in more detail, identify **keywords** and highlight the essential information.
- Look up any **technical words** or concepts you don't know.

After a good reading, you should then:

A/ Identifying the main sections:

- Work through the text to identify its main sections. A main section can be made up of one or various paragraphs. (Number each different section.)
- Write a one or two-sentence account of each section you identify.
- Focus your attention on the main point and leave out any illustrative examples.

B/ The starting point:

- Write a sentence which states the central idea of the original text.
- Complete the paragraph by including one or two sentences per main point or important part.

IV-6- Writing a Scientific Paper

When you write about scientific topics to specialists in a particular scientific field, we call that scientific writing. (When you write to non-specialists about scientific topics, we call that science writing.)

The scientific paper has developed over the past three centuries into a tool to communicate the results of scientific inquiry. The main audience for scientific papers is extremely specialized. The purpose of these papers is twofold: to present information so that it is easy to retrieve, and to present enough information that the reader can duplicate the scientific study.

A standard format with six main parts helps readers to find expected information and analysis:

- **Title:** subject and what aspect of the subject was studied.
- **Abstract:** summary of paper: The main reason for the study, the primary results, the main conclusions

- **Introduction:** *why* the study was undertaken
- **Methods and Materials:** *how* the study was undertaken
- **Results:** *what* was found
- **Discussion:** *why* these results could be significant (what the reasons might be for the patterns found or not found)
- **Conclusion:**
- **Reference list:**

- **A/- Title**

The title should be very limited and specific. Really, it should be a pithy summary of the article's main focus.

B/- Abstract

This is a summary of your article. Generally between 50-100 words, it should state the goals, results, and the main conclusions of your study. You should list the parameters of your study. Think of the process of writing the abstract as taking one or two sentences from each of your sections (an introductory sentence, a sentence stating the specific question addressed, a sentence listing your main techniques or procedures, two or three sentences describing your results, and one sentence describing your main conclusion).

C/- Introduction

The introduction is where you sketch out the background of your study, including why you have investigated the question that you have and how it relates to earlier research that has been done in the field. It may help to think of an introduction as a telescoping focus, where you begin with the broader context and gradually narrow to the specific problem addressed by the report. A typical (and very useful) construction of an introduction proceeds as follows:

1. Open with two or three sentences placing your study subject in context.
2. Follow with a description of the problem and its history, including previous research.
3. Describe how your work addresses a gap in existing knowledge or ability (here's where you'll state why you've undertaken this study).
4. State what information your article will address.

D/- Methods and Materials

In this section you describe how you performed your study. You need to provide enough information here for the reader to duplicate your experiment. However, be reasonable about who the reader is. Assume that he or she is someone familiar with the basic practices of your field.

It's helpful to both writer and reader to organize this section chronologically: that is, describe each procedure in the order it was performed. For example, DNA-extraction, purification, amplification, assay, detection. Or, study area, study population, sampling technique, variables studied, analysis method.

Include in this section:

- study design: procedures should be listed and described, or the reader should be referred to papers that have already described the used procedure
- particular techniques used and why, if relevant
- modifications of any techniques; be sure to describe the modification
- specialized equipment, including brand-names
- temporal, spatial, and historical description of study area and studied population
- assumptions underlying the study
- statistical methods, including software programs

E/- Results

This section presents the facts--what was found in the course of this investigation. Detailed data--measurements, counts, percentages, patterns--usually appear in tables, figures, and graphs, and the text of the section draws attention to the key data and relationships among data. Three rules of thumb will help you with this section:

- present results clearly and logically
- avoid excess verbiage
- consider providing a one-sentence summary at the beginning of each paragraph if you think it will help your reader understand your data

Remember to use table and figures effectively. But don't expect these to stand alone.

Notice how the second sample points out what is important in the accompanying figure. It makes us aware of relationships that we may not have noticed quickly otherwise and that will be important to the discussion.

- Related Information: Use Tables and Figures Effectively

Do not repeat all of the information in the text that appears in a table, but do summarize it. For example, if you present a table of temperature measurements taken at various times, describe the general pattern of temperature change and refer to the table.

Remember that readers have all that data in the accompanying tables and figures, so your task in this section is to highlight key data, changes, or relationships.

F/- Discussion

In this section you discuss your results. What aspect you choose to focus on depends on your results and on the main questions addressed by them. For example, if you were testing a new technique, you will want to discuss how useful this technique is: how well did it work, what are the benefits and drawbacks, etc. If you are presenting data that appear to refute or support earlier research, you will want to analyze both your own data and the earlier data--what conditions are different? how much difference is due to a change in the study design, and how much to a new property in the study subject? You may discuss the implication of your research--particularly if it has a direct bearing on a practical issue, such as conservation or public health.

G- Bibliography

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