Technical Writing and Speaking in English
Writing Introduction

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Overview

What do we expect of an Introduction?

- Serves as an orientation for readers of the article
- Gives the readers the perspective they need to understand the detailed information coming in later sections.

The introduction can be divided into **five parts, or stages**.

Exercise 1

1. Read again the introduction of the article "Using microcomputers in teaching". Try to identify the five stages present in the introduction.
2. What do you think is the purpose of each of the five stages in this introduction?
3. Why do you think the writers put the five stages in this particular order?
4. Do you think this order of information could be used for writing introductions in other fields or is it only valid for education?

The Five Stages of the Introduction

- **First Stage:** General statement(s) about a field of research to provide the reader with a setting for the problem to be reported
- **Second Stage:** More specific statements about the aspects of the problem already studied by other researchers
- **Third Stage:** Statement(s) that indicate the need for more investigation
- **Fourth Stage:** Very specific statement(s) giving the purpose/objectives of the writer's study
- **Fifth Stage:** Optional statement(s) that give a value or justification for carrying out the study

Answers for exercise 1

Stage 1

During the past 40 years, the United States has experienced the integration of the computer into society. Progress has been made to the point that small, inexpensive computers with expanded capabilities are available for innumerable uses. Many schools have purchased and are purchasing microcomputers for inclusion into their directed learning programs.

Answers for exercise 1

Stage 2

Most individuals seem to agree that the microcomputer will continue to hold on important role in education. Gubser (t980) and Hinton (T 980) suggested phenomenal increases in the num- bers of computers both in the school and the home in the near future. Schmidt (1982) identified three types of microcomputer use in classrooms: the object of a course, a support tool, and a means of providing instruction. Foster and Kleene (1982) cite four uses of microcomputers in vocational agriculture: drill and practice, tutorial, simulation and problem solving.
The findings of studies examining the use of various forms of computer-assisted instruction (CAI) have been mixed. Studies by Hickey (1968) and Honeycuff (1974) indicated superior results with CAI while studies by Ellis (1978), Caldwell (1980) and Belzer (1976) indicated little or no significant effect.

Answers for exercise 1

Stage 3

Although much work has been done to date, more studies need to be conducted to as- certain the effects of microcomputer-assisted instruction in teaching various subjects in a variety of learning situations.

Stage 4

The purpose of this study was to ascertain the effect of using microcomputer-assisted instruction as compared to a .lecture-discus- sion technique in teaching principles and methods of cost recovery and investment credit an agricultural assets to graduate students in agricultural education.

Section 5

This topic was identified as being of importance to teachers in providing them the necessary background to teach lessons in farm records.

Stage 1: Establishing a Context

- In stage 1 the writer establishes a context or frame of reference, to help readers understand how the research fits into a wider field of study.
- This part is called the setting:
  - Begin with accepted statements of fact related to your general area (your "universe")
  - Within the general area, identify one subarea (your "galaxy" which includes your topic)
  - Indicate your topic (your "star")

Exercise 2

1. Read the introduction present in `Exercises/3-Writing-Introduction-1.pdf` and answer the questions present in the document
2. Which sentences you think that are the “universe”, the “galaxy”, and the “star”?

Exercise 3

Read the paragraph below

Good Example

In most earthquakes, the earth's crust cracks like porcelain. Stress builds until a fracture forms at a depth of few kilometers and slip relieves the stress. Some earthquakes, however, take place where the earth cannot fracture. Such earthquakes, called deep earthquakes, occur hundreds of kilometers in the earth's mantle. At this depth, high pressure is thought to prevent the rock from cracking, even though stresses might be high enough to deform the rock like putty.

Which sentences you think that are the "universe", the "galaxy", and the "star"?

Exercise 4

The following statements are adapted from the setting (Stage I) of an introduction to a research report about ice on rivers. The sentences are not presented in their correct order. Do the following: Number the sentences in the order you believe they appeared in the original introduction, using old information and level of generality to guide you. For each sentence, indicate whether it makes a statement about the general area, a subarea, or the author's topic.

River Ice

A. _____ Water regularly changes back and forth from liquid to gas to solid
B. _____ River ice constitutes a small fraction of the total quantity of ice in the world.
C. _____ The solid phase of water takes many forms.
D. _____ Water is one of the most important substances on earth.
E. _____ Solid forms of water range from small snowflakes to immense polar ice caps.
F. _____ Water makes man's survival possible and supports his transportation needs.

Exercise 4 Answers

D = area, F = area, A = (transition to) subarea, C = subarea, E = subarea, B = topic

River Ice

D Water is one of the most important substances on earth.
F Water makes man's survival possible and supports his transportation needs.
A Water regularly changes back and forth from liquid to gas to solid
C The solid phase of water takes many forms.
E Solid forms of water range from small snowflakes to immense polar ice caps.
B River ice constitutes a small fraction of the total quantity of ice in the world.

Low Level Stage 1: Linking Ideas through Old and New Information Order

Sentence structure: old information at the beginning + new information at the end

Starting sentence

Plants obtain atmospheric CO2 required for photosynthesis by diffusion through open leaf stomates.

Old information

While this is taking place,

New information

water diffuses through the open stomates into the atmosphere.

Old information

This process

New information

can create large water potential differences between the leaves and the soil surrounding the roots.

Generic Noun Phrases

- In academic articles statements introducing the context, as in the introduction, are often general in nature. Instead of referring to specific things, it is often necessary to refer to **entire classes** of things.
- When you write sentences that contain nouns referring to an entire class of things, you should use **generic noun phrases** to carry this meaning.
- Generic noun phrases refer to all members of a particular class of things, objects like “mobile phones” or concepts like “a public health concern” in the examples below.
- In English there are different ways of writing generic noun phrases: **countable** and **uncountable**

Generic Noun Phrases : countable nouns

If the noun is **countable**, you can make it generic by adding the plural marker **–s** and omitting any article, or by using it in its singular form with the indefinite article **a** or **an**.

Example 1

Mobile/hand phones are powerful **communication devices**, first demonstrated by Motorola in 1973, and made commercially available from 1984. (plural)

Example 2

The study uses **a randomized controlled trial** to test the impact of simple, inexpensive, and non-personalized behavioral interventions on water consumption in the context of **a developing country**.

Example 3

School violence continues to be **a significant public health concern** in the United States.

Generic Noun Phrases : uncountable nouns

- When the noun you want to use is **uncountable**, you can make it generic by omitting any article.
- **Uncountable nouns never take a plural –s.**

Example

Overusage of mobile phones may cause psychological illness such as dry eyes.
(here we mean "all overusage")

Generic Noun Phrases: special case

- In addition, English has another way of forming generic nouns you should learn to recognize and use.
- A **Countable noun in its singular form** sometimes carries the generic meaning when used with the definite article **the**.
- This kind of generic noun phrase is often used when referring to living creatures or familiar machinery and equipment.

Generic noun phrases: countable nouns with **the**

Example 1

The United States has experienced the integration of **the computer** into society. (meaning "computers in general")

Example 2

The mobile phone is a powerful communication device

Specific Noun Phrases

- After introducing a context with generic noun phrases, it may be necessary to refer to specific items and concepts in order to move the reader forwards in the logic of one's thought.
- This requires the use of specific noun phrases – that is, nouns that refer to particular, individual members of a class as a whole.
- In English, nouns with this meaning can be written in several ways.

Specific Noun Phrases: 1 - Referring to assumed or shared information

- Use the definite article **the** if you assume your readers share knowledge of the specific thing you are referring to.

Example

In film buff histories, of **the retrospective compilations** produced for awards shows, and in commentary on youth culture, there are two commonly cited histories for teen film.

Specific Noun Phrases: 2 - Pointing back to old information

- Use the definite article **the** when referring to a specific thing which you have already mentioned (the first mention usually uses the indefinite article **a/an**).

Example

Relatives of a teacher killed in the shooting at Columbine High School in tre USA recently named twenty-five companies in **a lawsuit** claiming $5 dollars worth of damages ... Although **the case** was unsuccessful it is notable that it was rejected not because ...

Specific Noun Phrases: 3 - Pointing Forward to Specifying Information

- Use the definite article **the** when the specific meaning is made clear in a **following phrase or clause**.

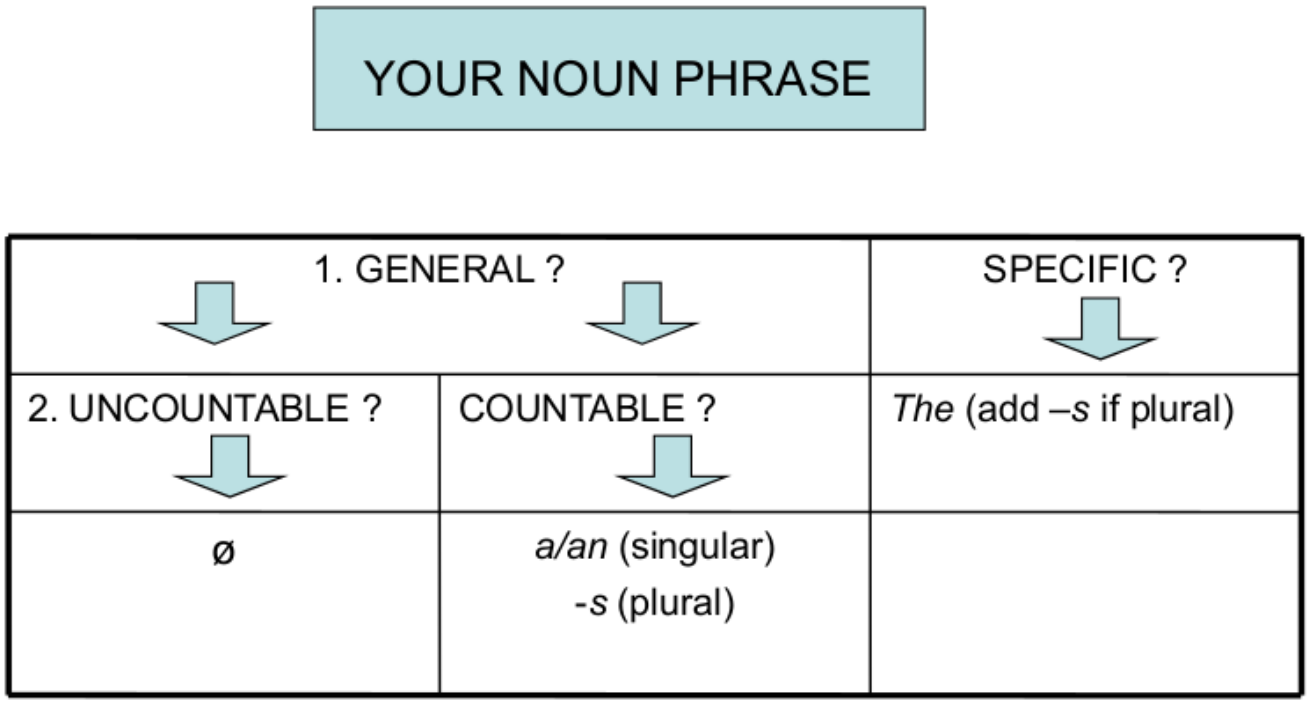
Example

Of **the** two hundred-odd films which Humbert claims to have seen with Lolita,
(here we mean the films that Humbert saw with Lotita, which are around two hundred)

Guidelines for Making Generic and Specific Noun Phrases

If you are having difficulty determining which, if any, article to use before a noun or noun phrase, ask yourself the following sequence of questions:

- Is the noun meant in a **general** or **specific sense** ? If it is **specific**, use "**the**" before the noun. If it is **general**, ask yourself a follow-up question:
- Is the noun **countable** or **uncountable**? If it is **countable**, use **a** or **an** (singular) or **–s** on the end (plural). If it is **uncountable**, use **ø** (no article or –s ending).
- **Uncountable nouns: no "s", no indefinite article, use a singular verb**



Expressing Old Information

- There are various ways you can state old information to connect back to the information in a previous sentence.
- One way is to simply repeat a word or to use a derived form of the word.

Word Repetition and Derivation

Example 1

Approximately three years ago, an apparently new and unexplained disorder called Acquired Immune Deficiency Syndrome (AIDS) was recognized. Characteristically, **AIDS** is associated with a progressive depletion of T cells.

Expressing Old Information

- Another way you can indicate old information is to use **pronouns** and **pointing words**

Example 1

Water is one of the most intriguing substances on earth. **It** has the interesting property that its freezing point is within the range of the earth's surface temperature variation for significant parts of the year.

Example 2

Ice forms when water is cooled to 0°C and continues to lose heat. Generally, **this** happens when the air temperature falls below 0°C.

Be aware of possible ambiguities!

Expressing Old Information

- **This vs. that :**
  - This refers to text which is near, usually the previous sentence
  - That refers to more distant previously mentioned text.
- **The former/the latter :** reference to two previously mentioned items.
  - **The former** refers to the item mentioned first
  - **The latter** refers to the item mentioned after the first one
- **This last:** either placed at the beginning of a sentence, or, after a comma in the same sentence. Refers to the final item often in a list.

Exercise 5

- Open the document in `Exercises/3-Writing-Introduction-2.pdf` and follow the instructions.

High Level Stage 1: "Beginning with the familiar"

- **The "beginning with the familiar" strategy:** Orient the audience by beginning with what was familiar before introducing what was new

What good writers do:

- show sensitivity to what the readers know by defining new terms and by relating new concepts to what is familiar.
- Write the sentences **from the audience's perspective**, and not yours.

Pitfalls to avoid: The empty beginning

Bad example

The cooling of turbine blades in jet engines is important. This paper focuses on a cooling scheme that uses small internal channels to cool the inner portions of blades. . . .

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The first sentence is **too vague**, it **adds nothing**. A solution to this is to say **why** is important.

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The first sentence is **too vague**, it **adds nothing**. A solution to this is to say **why** is important.

Good example

The cooling of turbine blades in jet engines is important because the combustion gases that flow over the blades are more than 500 °C hotter than the blades' melting temperature [7]. This paper focuses on a cooling scheme that uses small internal channels to cool the inner portions of blades. . . .

Quantitative evidence (500 °C hotter), and reference ([7]) provides **grounding** to the sentence.

Pitfalls to avoid: the “Genesis” beginning

Bad example

Man has since the beginning of time attempted to acquire a greater and greater control over his environment. Gaining control over a situation serves not only a survival-related need, but also a psychological need. Man’s need for better control of his environment has increased greatly during and following any time of major conflict, such as World War II. This need and desire for control is evident in all technological settings, including the welding field.

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- The document was about welding. The document will not say anything about prehistoric man or the Second World War.

How to deal with unfamiliar terms

- **The author** (not the reader) bears the responsibility of bridging the language gap to the audience.
- If your terms are not familiar, then you should either **avoid them** or **define them**.

How to deal with unfamiliar terms

Avoiding Unfamiliar Terms.

- Especially **jargon**, which is a vocabulary particular to a place of work.
  - Jargon can be useful if the purpose of the text is for communication within a place of work.
  - But otherwise, jargon alienates readers

Bad example

For the first year, the links with SDPC and the HAC were not connected, and all required OCS input data were artificially loaded. Thus, CATCH22 and MERWIN were not available.

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For the first year, the links with SDPC and the HAC were not connected, and all required OCS input data were artificially loaded. Thus, CATCH22 and MERWIN were not available.

We can't understand anything.

Good example

Because some links in the computer system were not connected the first year, we could not run all the software codes.

Now we understand a bit more.

How to deal with unfamiliar terms

Defining Unfamiliar Terms.

- It concerns both unfamiliar words, or familiar words with unusual meanings.

Good example

Retina is light-sensitive tissue that is found at the back of the eye and that converts light impulses into nerve impulses.

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Strategy used to define retina:

1. Start with a noun that identifies the class to which the term belonged.
   - "light-sensitive tissue" establishes the class.
2. Follow by enough information to separate that term from other terms in the class.
   - The rest of the information was to separate retina from other types of light-sensitive tissues.

How to deal with unfamiliar terms

- If a term appears several times in the text, you should consider creating an **abbreviation**.

Good example

In a central receiver system (CRS), a field of solar mirrors focuses sunlight onto a central boiler or receiver. An example of a CRS is the Solar One Power Plant located near Barstow, California.

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- Place the abbreviation in parentheses after the first full expression of the term in the document.
- If the term appears only once or twice in the text, you should simply avoid the abbreviation and use the full term.
- This technique is also good to **point back to old information**

How to deal with unfamiliar terms

Anchoring Unfamiliar Concepts with **examples** and **analogies**.

Bad example

Since the design of the Solar One Power Plant, significant advances have occurred in solar energy technology.

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Since the design of the Solar One Power Plant, significant advances have occurred in solar energy technology.

- "significant advances" is **too vague** and **generic**. You can solve this problem by giving an **example**

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- "significant advances" is **too vague** and **generic**. You can solve this problem by giving an **example**

Good example

Since the design of the Solar One Power Plant, significant advances have occurred in solar energy technology. For example, experimental tests have shown that using molten salt, rather than water, as the heat transfer fluid could increase overall system efficiency from 17 percent to 25 percent.

- Much **more grounded**, with **qualitative** (increase overall system efficiency) and **quantitative** (from 17 percent to 25 percent) evidence.

How to deal with unfamiliar terms

Numerical analogies: show the significance of numerical findings

Good example

In the brightness tests, the maximum retinal irradiance was less than 0.064 w/cm2, a brightness about that of a household light bulb. Kruger National Park in South Africa contains about 19,500 square kilometers, which is larger than the states of Connecticut and Rhode Island combined.

Exercise 6

- Open the document in `Exercises/3-Writing-Introduction-3.pdf` and follow the instructions.