Focus on reading
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# Table of contents

**Inglés técnico y científico: Objetivos** ................................................. 1  
  Objetivo general ................................................................. 1  
  Descripción del curso ......................................................... 1  
  Objetivos específicos de ID-1111: ........................................... 1  
  Objetivos específicos de ID-1112: ........................................... 2  
  Objetivos específicos de ID-1113: ........................................... 3  

**Introduction** ................................................................................. 5  

**Focus on reading** ........................................................................ 7  

**Focus on reading strategies** ....................................................... 9  
  How many of these reading strategies do you use? ...................... 12  
    Exercise 1: Steps to faster reading ........................................... 13  

**Focus on skimming and scanning** ............................................. 16  
  Exercise 2: Skimming ............................................................. 16  
  Exercise 3: Scanning ............................................................. 19  

**Focus on the topic, main idea and details** .................................. 20  
  Recognizing the topic and main idea ........................................ 22  
    Exercise 4: Identifying the topic ............................................ 23  
    Exercise 5: Identifying the topic sentence .............................. 23  
    Exercise 6: Identifying the main idea .................................... 24  
    Exercise 7: Identifying the details ........................................ 26  
    Exercise 8: Distinguishing major and minor details ............... 26  

**Focus on text organization** ....................................................... 29
Exercise 9: Text organization, topic, main idea .......................................................... 31

Focus on reference words .......................................................................................... 33
Exercise 10: Understanding personal pronoun references .................................... 34
Exercise 11: Understanding other references ............................................................ 36

Focus on inferences .................................................................................................. 38
Exercise 12: Identifying inferable information ....................................................... 39
Exercise 13: Justifying the logic behind your inference ......................................... 40
Exercise 14: Identifying the correct inference ......................................................... 41

Focus on vocabulary ............................................................................................... 44
Vocabulary strategy survey ...................................................................................... 45
The alphabet ............................................................................................................ 46
Exercise 15: Alphabet trivia quiz ........................................................................ 46
Exercise 16: Putting words in alphabetical order .................................................... 47
Using the dictionary ................................................................................................ 47
Parts of speech ........................................................................................................ 50
Exercise 17: Working with parts of speech .............................................................. 52
Evaluating your dictionary ...................................................................................... 53
Identifying specialized fields .................................................................................. 55
Exercise 18: Identifying specialized fields ............................................................... 55
Words and their meanings ...................................................................................... 56
Exercise 19: One word, several meanings ............................................................... 57
Exercise 20: One word, two meanings .................................................................. 58
Understanding word form ...................................................................................... 60
Prefixes ................................................................................................................... 60
Suffixes ................................................................................................................... 62
Exercise 21: Choosing the right prefix and suffix .................................................... 63
Becoming aware of cognate words ....................................................................... 66
What are cognates? ................................................................................................. 66
Exercise 22: Identifying cognates ............................................................................ 67
Exercise 23: False friends ....................................................................................... 68
Steps to effective vocabulary learning ................................................................. 69

Focus on compound nouns .................................................................................... 73
Exercise 24: Identifying the head noun ................................................................. 74
Exercise 25: Understanding the form of compound nouns .................................... 75
Exercise 26: Understanding the meaning of compound nouns .......................... 76
Exercise 27: Making and using compound nouns .................................................. 77
Exercise 28: Interpreting -ing and -ed in compound nouns .............................. 79

Focus on guessing meaning from context ......................................................... 81
Using context clues ................................................................................................ 82
Exercise 29: Identifying context clues ................................................................ 83
Focus on linking words ................................................................. 92
  Emphasis words ................................................................. 92
    Exercise 34: Recognizing emphasis words ......................................... 92
  Addition words ................................................................. 93
    Exercise 35: Recognizing addition words ........................................ 93
  Change-of-direction words ..................................................... 94
    Exercise 36: Recognizing change-of-direction words ............................. 94
  Illustration words ............................................................. 94
    Exercise 37: Recognizing illustration words ...................................... 94
  Conclusion words ............................................................... 95
    Exercise 38: Recognizing conclusion words .................................... 95
  More linking word exercises .................................................. 95
    Exercise 39: Identifying linking words ......................................... 95
    Exercise 40: Thinking about linking word role ................................ 96
    Exercise 41: Choosing time and sequence linking words ....................... 97
    Exercise 42: Choosing addition and contrast linking words .................... 97
    Exercise 43: Choosing the correct linking word ................................ 98

Focus on graphic organizers ....................................................... 100
  Concept maps ................................................................. 100

Focus on Summarizing .............................................................. 104
  What is summarizing? ................................................................ 104
  How to write a One-Paragraph Summary ......................................... 104

Focus on rhetorical functions ..................................................... 107
  What is a definition? ................................................................ 107
  Why are definitions used in technical texts? .................................. 108
  What are the types of definitions found in technical texts? .................. 108
  Writing definitions ................................................................... 109
    Exercise 44: Understanding the form of definitions .............................. 109
    Exercise 45: Identifying definition components .................................. 110
    Exercise 46: Identifying definitions types ....................................... 112
    Exercise 47: Analyzing definitions ................................................ 113
    Exercise 48: A final exercise on definition ...................................... 114
What is description? ................................................................. 116
  Why is description used in technical texts? ............................... 117
    Exercise 49: Identifying descriptive text .......................... 117
What is classification? ............................................................ 118
  Exercise 50: Determining criteria ......................................... 118
  Criteria for classification ................................................... 118
    Exercise 51: Identifying concept and criteria .................... 119
    Exercise 52: Identifying indicators of classification ......... 119
  Types of classification ..................................................... 120
    Exercise 53: A final exercise on classification ..................... 121
What is comparison and contrast? ............................................. 121
  Why is comparison and contrast used in writing? ..................... 121
    Exercise 54: Identifying comparison and contrast ................ 122
  Comparison and contrast indicators .................................... 123
    Exercise 55: A final exercise on comparison and contrast .... 124
What are chronological order and process? ................................. 124
  Why are chronological order and process used in technical and scientific writing? ......................................................... 125
    Exercise 56: Identifying time indicators ........................... 126
    Exercise 57: On your own .............................................. 127
    Exercise 58: Placing information in the correct order ............ 127
    Exercise 59: Using a graphic organizer for chronological events . 130
Process ............................................................................... 130
  How to identify process ..................................................... 132
    Exercise 60: On your own .............................................. 132
    Exercise 61: Working out stages in a process ...................... 133
    Exercise 62: Using a diagram to understand a process .......... 134
  The passive voice ................................................................ 135
    Exercise 63: Writing a process ........................................ 136
    Exercise 64: Writing and visualizing a process .................... 137
What is cause and effect? ....................................................... 138
  Cause and effect indicators ................................................. 141
    Exercise 65: Identifying cause and effect ......................... 142
    Exercise 66: Thinking about cause and effect .................... 142
    Exercise 67: Interpreting similar cause and effect sentences .. 143
    Exercise 68: Using graphic organizers for cause and effect .... 144
    Exercise 69: Reviewing organizational pattern indicators .... 145
What is a hypothesis? ............................................................. 147
  Expressing hypothesis in English ......................................... 148
  Different types of conditionals ............................................. 150
    Exercise 70: Identifying types of conditional to express hypothesis ......................................................... 151
  Probability ......................................................................... 152
    Exercise 71: Identifying probability .................................. 152
    Exercise 72: Identifying hypothesis .................................. 153
Exercise 73: Distinguishing fact from hypothesis .................................. 154
Detecting evidence ................................................................................. 154
Exercise 74: Finding evidence to support conclusions ......................... 155
Deductive and inductive reasoning ......................................................... 157
Exercise 75: Detecting inductive and deductive reasoning .................... 157
Separating facts from opinion ................................................................. 158
Exercise 76: Identifying fact and opinion ............................................. 159
What is an argument? ............................................................................. 160
Identifying arguments ........................................................................... 161
Common indicators in argumentative texts .......................................... 162
Book Reviews ....................................................................................... 164
Exercise 77: Distinguishing positive and negative comments ............... 166
Exercise 78: On your own ..................................................................... 167

Final tips ............................................................................................... 169

References ............................................................................................ 171

Apéndice: “¡No entiendo lo que leo en inglés!” ................................... 172
Aprender vocabulario en inglés ............................................................ 172
Listas de Vocabulario .......................................................................... 173
1-1000 Word List ................................................................................ 174
1001 – 2000 Word List .......................................................................... 179
Academic Word List ............................................................................ 182
El computador manual de Leitner ....................................................... 185
Procedimientos para la utilización del computador manual de Leitner .... 185
Inglés técnico y científico: Objetivos

Descripción del curso

Este programa está diseñado para desarrollar destrezas de lectura en inglés científico y tecnológico. El presente es el primero de tres cursos de 48 horas cada uno (Inglés Científico y Tecnológico I, II y III: ID1111, 1112 y 1113). Los estudiantes pueden eximir los tres cursos, o ingresar al programa en cualquiera de ellos, con base en los resultados que obtengan en la prueba de ubicación que se administra a cada cohorte al inicio del año académico. Los tres cursos que componen el programa se consideran interdependientes: los objetivos y estrategias especificados para cada uno constituyen la base para los cursos siguientes.

El programa está dirigido a los estudiantes de ingeniería y ciencias básicas. Forma parte del plan de estudios del Ciclo Básico ya que se considera que las destrezas de comprensión de lectura en inglés como lengua extranjera tendrán una aplicación inmediata para los estudiantes en las diferentes asignaturas que corresponden al Ciclo Profesional de sus estudios universitarios.

Objetivo general de ID-1111

Al finalizar el curso Inglés Científico y Tecnológico I (ID1111), el estudiante habrá ampliado sus repertorios lingüístico y estratégico iniciales a un nivel que le permita enfrentarse como lector a la información contenida en textos de carácter científico y tecnológico en inglés.
Objetivos específicos de ID-1111

El énfasis de este curso está en un enfoque de lectura intensiva, el cual plantea la instrucción y práctica en destrezas específicas. A través de la lectura de textos cortos o fragmentos de texto, se espera que el estudiante:

1. Comprenda las unidades léxicas más frecuentemente encontradas en textos de carácter científico y tecnológico. Para ello, el estudiante debe adquirir un mínimo vocabulario de vista que le permita:
   a) reconocer automáticamente el significado de unidades léxicas de la lengua general que se encuentran con alta frecuencia en el discurso científico y tecnológico en inglés, y
   b) reconocer automáticamente el significado del léxico semiespecializado o ‘académico’ de mayor frecuencia en el discurso científico y tecnológico en inglés.
2. Aplique la técnica de lectura más apropiada a sus propósitos como lector en una situación dada.
3. Desarrolle la metacognición, o reflexión sobre el propio conocimiento, como elemento para la aplicación de estrategias de comprensión de lectura en inglés como lengua extranjera.
4. Determine el significado de elementos léxicos desconocidos a partir del contexto.
5. Deduzca las relaciones entre oraciones, y entre partes de un mismo texto, mediante elementos cohesivos.
6. Entienda la información explícita y/o implícita que se presenta.
7. Distinga entre la idea principal y las ideas secundarias.
8. Identifique el propósito principal del autor.
9. Reconozca la organización de un texto.
10. Integre información para llegar a una conclusión.
11. Interprete la información de una tabla o un gráfico.
12. Se familiarice con las expresiones de medida y magnitud para cuantificar las diferentes unidades utilizadas en inglés científico y tecnológico.
13. Aplique la información obtenida a través de los contenidos del curso a situaciones nuevas.

Objetivo general de ID-1112

Al finalizar el curso Inglés Científico y Tecnológico II (ID1112), el estudiante estará en capacidad de acceder a la información contenida en textos expositivo-
explicativos de carácter científico y tecnológico en inglés, utilizando la estrategia de lectura más adecuada a sus propósitos específicos como lector.

**Objetivos específicos de ID-1112**

En esta asignatura los contenidos giran en torno a las principales formas de organizar el discurso propias de la estructura retórica expositivo-explicativa que caracteriza el lenguaje de la ciencia y la tecnología.

Al igual que el primer curso del programa, este segundo curso contempla un enfoque de lectura intensiva, con énfasis en la instrucción y práctica en destrezas específicas. Al leer los textos seleccionados para este curso, el estudiante analizará los mismos con el propósito de entender la información explícita y/o implícita que se presenta. Para tal fin utilizará todas las destrezas adquiridas en el curso anterior, además de incorporar las siguientes:

1. Entender los indicadores léxicos o léxico-gramaticales de las formas de organización del discurso propias de la estructura retórica expositivo-explicativa, a saber:
   a) Definición,
   b) Descripción estática y dinámica,
   c) Clasificación,
   d) Comparación,
   e) Exposición cronológica y
   f) Relación causa-efecto.
2. Organizar en forma gráfica la información contenida en el texto.
3. Distinguir las relaciones entre las partes de la oración a través de la identificación de los patrones sintácticos utilizados con frecuencia en el inglés científico y tecnológico.
4. Discriminar el grado con que el autor afirma, niega o pone en duda un enunciado.
5. Identificar la actitud del autor.
6. Resumir la información presentada en el texto.

**Objetivo general de ID-1113**

Al finalizar el curso Inglés Científico y Tecnológico III (ID1113), el estudiante estará en capacidad de acceder a la información contenida en textos argumentativos de carácter científico y tecnológico en inglés, manteniendo una
postura crítica y utilizando la estrategia de lectura más adecuada a sus propósitos específicos como lector.

**Objetivos específicos de ID-1113**

En esta asignatura se hace énfasis en la argumentación como estructura retórica. Además, los contenidos se organizan por unidades temáticas (por ejemplo: Universo, Evolución, Inteligencia Artificial, Desarrollo Sustentable, entre otros). El propósito específico de este curso se centra en el desarrollo de destrezas de lectura crítica.

Este curso contempla la lectura de textos completos y de mayor longitud. La instrucción adopta un carácter de lectura restringida (narrow reading), que incluye en cada una de las unidades varios textos sobre un mismo tema con puntos de vista diferentes. El estudiante leerá los textos seleccionados para este curso con la intención de:

1. Identificar las formas de razonamiento y los indicadores léxicos o léxico-gramaticales instituidos a través de las convenciones discursivas de la argumentación.
2. Diferenciar entre hechos e hipótesis expresadas en un texto.
3. Diferenciar entre hechos y opiniones expresadas en un texto.
4. Resumir la información contenida en diversos textos referentes al mismo tema.
5. Comparar textos con base en criterios como la secuencia en la que se presentan las ideas, la coherencia lógica, la capacidad de persuasión y la vigencia de sus argumentos.
6. Expresar juicios sobre la validez de la información contenida en un texto con base en criterios internos, tales como el desarrollo lógico, la coherencia y la pertinencia de los ejemplos.
7. Expresar juicios sobre la validez de la información contenida en un texto con base en criterios externos, tales como opiniones de autoridades en la materia u otras fuentes que confirmen, contrasten o complementen dicha información.
8. Reevaluar un determinado texto con base en nueva información sobre el mismo tema.
9. Aproximarse al texto científico especializado a través de diversas fuentes de información y herramientas de investigación.
10. Explorar géneros alternativos y complementarios al discurso científico y tecnológico con el objeto de desarrollar el gusto por la lectura.
Welcome to our First Year Reading Program, the purpose of which is to help you become an effective reader.

This handbook was prepared to be used in the first and second First Year English courses, that is, in ID-1111 and ID-1112. In the third trimester, the handbook is optional and may be used by students who were directly placed in ID-1113 to review basic concepts and terminology that has been covered in the previous two terms.

Here’s a breakdown of what you will find in this guide:

Focus on Reading

Focus on Reading Strategies

Focus on Skimming and Scanning

Focus on the Topic, Main Idea and Details

Focus on Text Organization

Focus on References

Focus on Inferences

Focus on Vocabulary

Focus on Compound Nouns

Focus on Guessing Meaning from Context

Focus on Linking Words
Focus on Graphic Organizers

Focus on Summarizing

Focus on Rhetorical Functions

¡No entiendo lo que leo en inglés!

So get ready to start improving your reading skills. There is a lot you can do on your own to do that, but your teacher will be there to help you as well.

The Departamento de Idiomas wishes you a very successful year.

Please contact us if you need any additional help or information.

Rubena St. Louis, Silvia Pereira and Noela Cartaya for Sección de Primer Año
September, 2006
The reason for writing a text is to communicate ideas. In your reading of scientific and technical texts, knowing how the text is structured will help you to understand what the writer has in mind, i.e., his/her purpose for writing. Most academic writing is structured in the following way: an introduction where the author states the topic to be discussed, a statement on the problem, etc.; the body of the text, made up of several paragraphs, where the writer develops the main idea stated in the introduction; and the conclusion which is a summary of the content of the article and in which the writer may give his own opinion on the subject or make predictions for the future.

In order to communicate his ideas, a writer will use and structure language in different ways. He will use different functions of the language. For example, when discussing “New procedures in cloning” the writer might first explain what cloning is by defining the term. He may then go on to classify this scientific term within the procedures used for the reproduction of species. The writer might also give a short chronological summary of the events leading up to the discovery and application of the new technique. Then he may proceed to explain the steps to be taken, i.e., the process involved using description. He may then compare and/or contrast this procedure with previous ones. This new technique will undoubtedly lead to changes in our society and so the writer might discuss the reasons the technique might be used and its consequences, i.e., the causes and their effects, in the future. He may go further on and make predictions based on this knowledge. Finally, the author may want to convince you that cloning will be good for society and will give arguments, or reasons, to support his claim. It is then up to you, the reader, to decide if these arguments are based on facts or are only the writer’s opinion or a hypothesis that he has which has not been tested. So, depending on the author’s purpose—to narrate, describe, explain or persuade, he will use the language in different forms.
To communicate his ideas, the writer must put them on paper in a coherent manner so that you, the reader, can understand them. The different sentences which make up a paragraph and the paragraphs themselves are linked together in a logical manner through the use of **connectives**, like ‘and,’ ‘but,’ ‘because’, which also focus the reader’s attention on specific information in the text. To avoid repetition or words or even ideas, the writer also uses pronouns such as ‘that,’ ‘it,’ and ‘they.’ In this guide, these are called **references**.

Finally, the topic the writer wishes to discuss is referred to as the **topic** of the text and the central idea is known as the **main idea**. The writer develops the main idea throughout the paragraphs with **details** which add information to the main idea. It is important that you recognize the main idea of the text, of the individual paragraphs, and be able to extract the relevant details which support the main idea.

These aspects of the text will be explained in more detail in this reading guide and there are exercises for you to practice recognizing and producing these patterns. But let’s look first at the way you the reader interact with the text.
Some people are better readers than others. Why is this so? Effective readers read for a purpose, summarize main ideas, reject ideas of lesser importance, organize information, and monitor their comprehension as they read. They try to predict the information they will meet in the text by using the text structure, their prior knowledge of the theme, or using any graphic information that might be there. When they don’t understand what they are reading they will re-read unclear sections and/or continue reading to try to connect information through visual images or by using the text patterns and pronouns. These are called strategies and all readers use them either consciously or unconsciously.

Here are some reading strategies. How many of them do YOU use?

1. **Using the headlines or title to predict the content.** The headline of a text can give you a clue to the information you will find within the article. You will then use your...

2. **background or prior knowledge of the topic.** All of the information you already have on the subject will help you to understand the new data found in the article. You can also look at...

3. **photographs, graphics and charts.** These will also give you an idea of the content of the text and help predict the information you will find. Afterwards,...

4. **quickly read the text to get a general idea of content.** This can either confirm or reject the predictions you made about the content of the article. Was the content what you thought it might be? Was it different? While reading the text you are constantly...

5. **asking yourself questions about the information and looking for the answers.** This is a good way to check your understanding of the text. If you have problems, you can then try...
6. . . re-reading the parts of the text you don’t understand. Maybe you read to quickly and skipped over important words or there may be unknown vocabulary that you might need to look up in the dictionary. To check your understanding of the text you can also try . . .

7. . . underlining important information found in the text. This will help you locate the main idea and details used by the writer so that later you can check your comprehension by . . .

8. . . writing the topic and main idea in your own words, summarizing the text or putting the information in another form like on a graphic organizer.

Now practice using these strategies while you read the following article.

Fast Food Linked to Obesity, Diabetes

Attention, fast food devotees. If the start of a new year wasn’t enough to make you change your eating habits, the results of new research might be. A long-term study has specifically linked consumption of fast food to obesity and type 2 diabetes.

Scientists writing in the current issue of The Lancet report that study participants who visited fast food restaurants twice a week or more gained 10 more pounds and experienced double the increase in insulin resistance compared to subjects who indulged less than once a week. "While there have been many discussions about fast food’s effects on obesity, this appears to be the first scientific, comprehensive long-term study to show a strong connection between fast-food consumption, obesity, and risk for type 2 diabetes," comments study co-author Mark Pereira of the University of Minnesota. Pereira and colleague David Ludwig of the Children’s Hospital Boston followed 3,031 African-American and white young adults ages 18 to 30 at the start of the study for 15 years, monitoring their fast-food habits, weight and insulin resistance. Taking into account television viewing, physical activity, alcohol consumption, smoking and other lifestyle factors, the team determined that increases in body weight and insulin resistance from fast-food intake seemed to be largely independent of those factors. —Kate Wong

Taken from http://scientificamerican.com/

Using the headlines of this article, think about all that you know about fast food, obesity and diabetes. —Here you’re using strategies 1 & 2

If you’re not sure what fast foods are, use the picture given. What other examples of fast foods do you know? —Strategy 3
Quickly read the text. Were you given any new information that you did not know? — Strategy 4

Was there any part of the article that you didn’t understand? Was it because you did not understand special terms or because of unknown vocabulary? Did you have to read it more slowly or several times? — Strategy 6

What information did you underline? Did you do so because you thought the information was important? — Strategy 7

Did you underline information that answered a question you had asked yourself while reading? — Strategy 5

Can you summarize the information in your own words? — Strategy 8

These are just a few reading strategies that you can use. Now, take the following survey to find out the strategies you are using at present and those that you can use in the future to make you a better reader.
How many of these reading strategies do you use?

Read the strategies listed below and indicate if you use them:

A = Always  S = Sometimes  N = Never

There are many different ways of doing things. Have you noticed that some people manage to get all their studying done on time and others don’t? Being a good student doesn’t only depend on what you know, but how you go about learning it!!

So, how do you read? Take a look at the strategies in this survey. How many of them are you conscious of doing while you read? Take another look at those that you should be using. Try them and see the result for yourself!!

<table>
<thead>
<tr>
<th>Strategy</th>
<th>A</th>
<th>S</th>
<th>N</th>
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<tbody>
<tr>
<td>Using the headlines or title to predict the content</td>
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<tr>
<td>Quickly reading the text to get a general idea of content</td>
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<tr>
<td>Using any photographs or illustrations to get an idea of the content</td>
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<tr>
<td>Using the information you may have on the theme</td>
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<tr>
<td>Skipping over unknown words in the text</td>
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<tr>
<td>Looking up the unknown words in the dictionary</td>
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<tr>
<td>Trying to use the context to guess the meaning</td>
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<tr>
<td>Asking a friend for help</td>
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<tr>
<td>Using the new words in sentences</td>
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<tr>
<td>Learning the new words by heart (=&quot;de memoria&quot;)</td>
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</tr>
<tr>
<td>Underlining important information in the text</td>
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<tr>
<td>Writing the topic and main idea in your own words</td>
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<tr>
<td>Re-reading the parts of the text you don’t understand</td>
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<tr>
<td>Putting the information in another form (graphic organizer)</td>
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<tr>
<td>Asking yourself questions about the information and looking for the answers</td>
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<tr>
<td>Writing a summary of the text in your own words</td>
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</table>

What other strategies do you use and how helpful do you think they are?

________________________________________________________________________

________________________________________________________________________
Exercise 1: Steps to faster reading

Take some time and read through these steps to faster reading. Underline or highlight what you consider to be the most important information. After reading, summarize what you’ve learnt by putting the information on the graphic organizer provided.

Step 1: Preview

When you read, do you start in with the first word, or do you look over the whole selection for a moment? Good readers preview the selection first. This helps to make them good, and fast, readers.

- **Read the Title:** The first thing to do when previewing is to read the title of the selection. Titles are designed not only to announce the subject, but also to make the reader think. What can you learn from the title? What thoughts does it bring to mind? What do you already know about this subject?

- **Read the Opening Paragraph:** If the first paragraph is long, read the first sentence or two instead. The first paragraph is the writer’s opportunity to greet the reader. He may have something to tell you about what is to come. Some writers announce what they hope to tell you in the selection. Some writers tell why they are writing. Some writers just try to get the reader’s attention, they may ask a provocative question.

- **Read the Closing Paragraph:** If the last paragraph is long, read just the final line or two. The closing paragraph is the writer’s last chance to talk to his reader. He may have something important to say at the end. Some writers repeat the main idea once more. Some writers draw a conclusion: this is what they have been leading up to. Some writers summarize their thoughts; they tie all the facts together.

- **Glance Through:** Scan the selection quickly to see what else you can pick up. Discover whatever you can to help you read the selection. Are there names, dates, numbers? If so, you may have to read more slowly. Are there colorful adjectives? The selection might be light and fairly easy to read. Is the selection informative, containing a lot of facts, or conversational, an informal discussion with the reader?

Step 2: Read for Meaning

When you read do you just see words? Are you so occupied reading words that you sometimes fail to get the meaning? Good readers see beyond the words, they read for meaning. This makes them faster readers.

- **Build Concentration:** You cannot read with understanding if you are not concentrating. Every reader’s mind wanders occasionally; it is not a cause for alarm. When you discover that your thoughts have strayed, correct the situation right away. The longer you wait, the harder it becomes. Avoid distractions and distracting situations. Outside noise and activities will compete for your attention if
you let them. Keep the preview information in mind as you read. This will help to focus your attention on the selection.

- **Read in Thought Groups**: Individual words do not tell us much. They must be combined with other words in order to yield meaning. To obtain meaning from the printed page, therefore, the reader should see the words in meaningful combinations. If you see only a word at a time (called word-by-word reading), your comprehension suffers along with your speed. To improve both speed and comprehension, try to group the words into phrases which have a natural relationship to each other. For practice, you might want to read aloud, trying to speak the words in meaningful combinations.

- **Question the Author**: To sustain the pace you have set for yourself, and to maintain a high level of comprehension, question the writer as you read. Continually ask yourself such questions as “What does this mean?” “What is he saying now?” “How can I use this information?” Questions like these help you to concentrate fully on the selection.

**Step 3: Grasp Paragraph Sense**

The paragraph is the basic unit of meaning. If you can discover quickly and understand the main point of each paragraph, you can comprehend the author's message. Good readers know how to find the main ideas of paragraphs quickly. This helps to make them faster readers.

- **Find the Topic Sentence**: The topic sentence, the sentence containing the main idea, is often the first sentence of a paragraph. It is followed by other sentences which support, develop or explain the main idea. Sometimes a topic sentence comes at the end of a paragraph. When it does, the supporting details come first, building the base for the topic sentence. Some paragraphs do not have a topic sentence. Such paragraphs usually create a mood or feeling, rather than present information.

- **Understand Paragraph Structure**: Every well-written paragraph has purpose. The purpose may be to inform, define, explain, persuade, compare or contrast, illustrate and so on. The purpose should always relate to the main idea and expand on it. As you read each paragraph, see how the body of the paragraph is used to tell you more about the main idea or topic sentence. Read the supporting details intelligently, recognizing that what you are reading is all designed to develop the single main idea.

**Step 4: Organize Facts**

When you read, do you tend to see a lot of facts without any apparent connection or relationship? Understanding how the facts all fit together to deliver the author's message is, after all, the reason for reading. Good readers organize facts as they read. This helps them to read rapidly and well.

- **Discover the Writer's Plan**: Look for a clue or signal word early in the article which might reveal the author's structure. Every writer has a plan or outline which he follows. If the reader can discover his method or organization, he has the key...
to understanding the message. Sometimes the author gives you obvious signals. If he says “There are three reasons . . . ,” the wise reader looks for a listing of the three items. Other less obvious signal words — such as ‘moreover,’ ‘otherwise,’ and ‘consequently’ — tell the reader the direction the writer’s message will take.

Relate as You Read: As you read the selection, keep the information learned during the preview in mind. See how the ideas you are reading all fit into place. Consciously strive to relate what you are reading to the title. See how the author is carrying through his attempt to piece together a meaningful message. As you discover the relationship among the ideas, the message comes through quickly and clearly.

Focus on skimming and scanning

Skimming and scanning are two important skills that you need when you have to read quickly for information. Skimming means **reading quickly for the general meaning of the text**, i.e., to find out about the topic, the main ideas and the general organization of the text. Scanning, on the other hand, means **knowing what information is needed before reading so you read quickly looking for that particular information**.

There are some steps for skimming:

Read the main title of the chapter or text and all of the headings. Notice how these relate to one another. For example, are the headings steps in a process, categories into which the topic is divided, chronological events or some other classification?

Examine pictures, charts and other illustrations in the chapter or text to get information about the contents.

Look at all words and phrases in special print: italicized, **boldface**, SMALL CAPS or **underlined**. Try to determine the author’s reason for emphasizing them. They may be important vocabulary, important ideas or words that have a special meaning in this passage that is different from their usual one.

Rapidly read the first and last paragraph of the text and the first sentence of each paragraph. Try to get the general idea of the text. Don’t worry about the words you don’t know!

**Exercise 2:** **Skimming**

**Passage 1.** Skim this newspaper article. You should finish in less than 60 seconds. Then answer the questions.
A New Drug for Heart Attacks

Doctors may now be able to stop many heart attacks. An important new study reports that doctors have a new drug. This drug is called TPA. It may be better than any other heart drug.

Many doctors now use a drug called streptokinase. But this drug sometimes causes problems for patients. It can even cause bleeding in the brain. Some doctors do not use streptokinase. Streptokinase can save about 1/3 of the people with heart attacks. But TPA will save about 2/3. This means many people. About 1.5 million Americans have heart attacks every year.

One reason TPA can help more people is because of time. This new drug is easier and faster to use. It will give doctors more time in hospitals. Then they can study the problem well. People with heart problems can also keep some TPA at home. When a heart attack starts, they can take some TPA right away. Then they will have time to get to the hospital. This is important because about 860,000 people in the United States die before they get to the hospital.

There is another reason why TPA is good news for people with heart attacks. According to the study, it is much safer. It does not cause other problems like streptokinase. TPA works only on the heart. It does not have an effect on the blood or cause bleeding, like streptokinase.

Doctors plan to do more studies about TPA. They need to test this new drug on many more people with heart attacks. But in a few years, many doctors and hospitals will probably start using this exciting new drug.

1. The new drug is ___.
   A. the same as streptokinase
   B. better than streptokinase
   C. called streptokinase
   D. bad for people with heart attacks

2. The study says that TPA ___.
   A. is safer and faster than the old drug
   B. is very dangerous
   C. is slower and harder to use than the old drug
   D. causes many problems

3. This new drug may mean ___ will die from heart attacks.
   A. more people
   B. the same number of people
   C. fewer people
   D. no one

Passage 2. Skim the following passage in 30 seconds. Then, read each question, and circle the correct answer.

In marine habitats, a number of small creatures are involved in a “cleaning symbiosis.” At least six species of small shrimp, frequently brightly colored, crawl over fish, picking off parasites and cleaning injured areas. This is not an accidental occurrence, because fish are observed to congregate around these shrimp and stay motionless while being inspected. Several species of small fish (wrasses) are also cleaners, nearly all of them having appropriate adaptations such as long snouts, tweezer-like teeth, and bright coloration. Conspicuous coloration probably communicates that these animals are not prey.

1. This passage is mainly about a ___.
   A. process of marine life
   B. place in the sea
   C. species of marine life
   D. mystery of marine life

2. The habitat described is ___.
   A. an aquarium
   B. an island
   C. the ocean
   D. a laboratory

3. The “cleaning symbiosis” described in the passage is ___.
   A. unimportant
   B. harmful
   C. predatory
   D. beneficial

Exercise 3: Scanning

Now, let's turn to scanning. Scanning is very high-speed reading. When you scan a text, you usually have a question in mind so you don’t read every word, but look for the words that can answer your question. Let’s practice scanning. First read the question, decide on the information you need and then quickly go through the text to find the answer.

Local pain-killer may help migraines

CHICAGO: Nose drops containing lidocaine, a local anaesthetic commonly used to treat sunburn, haemorrhoids and other conditions, may offer quick relief from migraine headaches, a study said yesterday.

The drops “provided rapid and effective pain relief in approximately 55 percent of patients with migraine headaches in our urgent care population,” said the study by Southern California Permanent Medical Group in Woodland Hills.

“Most of the effect occurred within five minutes, and nausea and photophobia (sensitivity to light) were similarly relieved,” said the study published in this week’s Journal of the American Medical Association.

The researchers said 42 percent of those who responded favourably to the drug had a relapse to headaches of “moderate or severe intensity” usually within an hour but the rest of the group did not.

Lidocaine is not available commercially as nose drops, the researchers said. They also said the small size of the study, involving 81 patients, indicated that broader tests were needed. Migraines affect about 17 percent of all adult women and six percent of adult men.

Newsday, Wednesday July 24, 1996

What drug does the nose drop contain?

________________________________

In what journal was the study published?

________________________________

What symptoms disappeared?

________________________________

How many subjects were involved in the study?

________________________________

What percentage of the group did NOT have a relapse?

________________________________
Focus on the topic, main idea and details

So, as we’ve said before, the topic is the general theme that the author is going to discuss throughout his paper. The main idea is the most important point that the author wants to make. It answers the question “What is important about the topic?” Sometimes the main idea is stated in the topic sentence. In the paragraphs which follow, the author supports his argument through explanations which develop the ideas he has on the topic. This is done through details. Major details tell you more about the main idea while minor details give you more information about the major details. So an essay or article will have one topic and many main ideas which are developed, through details, in their corresponding paragraphs. Let’s look at the topic, the main idea and details in the following examples taken from Scientific American.

When the topic sentence is written at the beginning of the paragraph, the other sentences explain, support, or give details about the main idea. This is known as a broad statement followed by support. Look at the example below.

<table>
<thead>
<tr>
<th>Topic sentence or main idea</th>
<th>Supporting ideas</th>
</tr>
</thead>
<tbody>
<tr>
<td>To help forestall today’s catastrophic wildfires, some forest experts recommend that we return forests to yesterday’s conditions. William Wallace Covington, a forest restoration expert at Northern Arizona University, suggests thinning Western forests from their current density of 200 trees per acre or more to a pre-1800 level of about 30 or 40 trees per acre—the level determined by how many old trees or pre-1800 tree stumps are counted on a given acre. With that goal accomplished, prescribed—or planned—fire or even natural fire could be reintroduced to forests without the risk of a huge blaze.</td>
<td></td>
</tr>
</tbody>
</table>

*From “The Natural Solution” (Scientific American, November 2002 p. 87)*
When the topic sentence comes in the middle of the paragraph, the supporting sentences act as an introduction and then as support for the main idea. This type of paragraph is known as **an introduction, a main idea and supporting sentences**.

Introduction

Hansford has the most complex hot refuse: it consists of a mix of wastes from many nuclear fuel reprocessing projects. **Engineers are currently planning a two-stage ion exchange process to extract radioactive cesium and technetium from the soluble part of the alkaline tank waste.** In this process, columns of polymer resin beads attract the harmful elements, which are later removed from the beads with acid.

*From “Divide and vitrify” (Scientific American, June 2002, p.18)*

Finally, the topic sentence may be found at the end of the paragraph. Here the details are used to reinforce the main idea. This type is called **reasons leading to a conclusion**. Look at the paragraph

Introduction

The cloning process also appears to reset the “aging clock” in cloned cells, so that the cells appear younger in some ways than the cells from which they were cloned. In 2000 we reported that telomeres—the caps at the end of the chromosomes—from cloned calves are just as long as those from control calves. Telomeres normally shorten or are damaged as an organism ages.

Main idea

**Therapeutic cloning may provide “young” cells for an aging population.**

*From “The first human cloned embryo” (Scientific American, January 2002, p. 51).*

However, there are times when there is no topic sentence and the paragraph is just **a list of equally important statements**. Here the reader must find the main idea. Look at this paragraph.

Unusual grimaces are normally the first sign that something is wrong. Next, affected people become more and more absent minded and begin to display involuntary gestures, especially when under psychological or physical stress. As the disease progresses, the dancelike movements—which may be confused with drunkenness—occur more frequently and become disabling. People lose their capacity to perform simple, everyday tasks and show impairments in intellectual abilities such as planning. In the later stages, depression and aggressiveness—and, in the most severe cases, dementia and psychosis—take over, reducing a formerly healthy, vital family member, friend or co-worker to a miserable, bedridden shadow.

*From “The enigma of Huntington’s disease” (Scientific American, December, 2002, p. 93).*
So remember that the topic sentence usually appears at the beginning of a paragraph, but sometimes, as we have seen, it may appear in the middle of the paragraph or even at the end. Also remember that in some paragraphs it may not be explicitly expressed at all and so you may have to infer it.

In the rest of this section, we will look at the topic, main idea and details more thoroughly and practice locating them in texts.

Recognizing the topic and main idea

To find the topic of any text ask the question “Who or what is being discussed? Who or what is the subject of this material?” Look for keywords or topic words, i.e., words that are directly related to the theme. Let’s try this example:

Sledding is no longer just a winter sport. In fact, it’s even becoming a popular sport in deserts. Desert sledders just head for a sand dune. They slide on plastic saucers, pieces of wood or just on their own two feet. No matter which kind of sled is used, a great part of the fun is tipping over into the sand. And deserts aren’t the only places where there are sand dunes. Many beaches have them, too. So, if there’s a dune near you, why not try sand sledding? One of the best things about it is that you won’t get cold.

If we ask ourselves what is being discussed, we can say that it’s sledding. So the topic of the passage is sledding. The key words in the text are sand and sled. If we ask ourselves “What is the author trying to tell us about sledding” the answer would be that sledding can also be done on sand. The author gives several examples of places with sand, like deserts and beaches, adding more detail to the general idea of sledding. So, the main idea of the text is sledding can be done on sand.

Let’s look at another example.

Chances are you’ve never seen a California condor, and you probably never will. These giant birds are becoming extinct. They are disappearing because of people. As people use more and more of the land for farms, roads and buildings, land was taken away from wildlife. The forests where the condors lived have been used up. Some of the birds died from poisons that farmers used to try to kill other animals. Fewer baby condors are born each year. Though they are now protected, many people fear that by the year 2000 all the condors will be gone.

Which of the following options is the main idea?
A. People have caused the extinction of many animals.
B. People used up the forests in which the California condor lived.
C. The California condor is becoming extinct.
The phrase “many animals” in option A makes this statement too broad. The only animal mentioned in the passage is the condor. The statement in option B tells us nothing about the danger of extinction. So it’s too narrow. Option C is the main idea of the passage because it is the most important point made about the condor. All the facts and details support this idea.

Now, let’s practice by doing these exercises.

**Exercise 4: Identifying the topic**

Read the following paragraphs. Check (✓) the best topic. Write “too narrow” or “too broad” after the other topics.

The first people to grow coffee beans lived in the Middle East. The Persians, Arabs and Turks were drinking coffee many hundreds of years ago. Then, in the 1600s, Europeans learned about coffee. They quickly learned to like it. Soon there were coffee houses in many European cities. Europeans took coffee with them when they traveled to new countries. That is how people in other parts of the world learned about coffee. Now coffee is very popular in North and South America, in Africa and in parts of Asia.

- The history of coffee
- European coffee houses
- Popular drinks
- Coffee

All around the world large cities have the same problem. That problem is air pollution. Mexico City has very bad air. The air there is dirty and very unhealthy. Cars are one reason for the dirty air. Many Mexicans now own their own cars and drive in the city. The factories in the area also cause air pollution. These factories put a lot of smoke into the air. It is not easy to clean up the air in a large city. The government has to make new laws and everyone has to help.

- Mexico City’s air pollution
- How factories cause air pollution
- Life in Mexico City
- Air pollution

**Exercise 5: Identifying the topic sentence**

Read the paragraphs below and underline the topic sentence. In the space provided, explain how you decided on this particular sentence.

1. Modern man, in spite of his superior scientific knowledge, often seems as superstitious as his ancestors. Astrology is a half-billion-dollar business. Intelligent persons still believe that lines on their palm or the arrangement of tea leaves in a cup
predict the future. Airplanes do not have a row of seats numbered 13 and buildings omit a thirteenth floor. Black cats, broken mirrors and spilled salt create fear and anxiety in many people. And ouija boards continue to be a popular pastime.

2. From Italian we get such words as ‘balcony,’ ‘cavalry,’ ‘miniature,’ ‘opera’ and ‘umbrella’. Spanish has given us ‘mosquito,’ ‘ranch,’ ‘cigar,’ and ‘vanilla.’ Dutch has provided ‘brandy,’ ‘golf,’ ‘measles’ and ‘wagon’. From Arabic we have borrowed ‘alcohol,’ ‘chemistry,’ ‘magazine,’ ‘zenith’ and ‘zero’. And Persian has loaned us ‘chess,’ ‘checkers,’ ‘lemon,’ ‘paradise’ and ‘spinach’. It is clear that English is a language that borrows freely from many sources.

3. There are four different tides, depending upon the position of the sun and moon in relation to the earth. When the sun and moon are in direct line with the earth, they exert their greatest gravitational force, causing abnormally high or “spring” tides. When the sun, moon and earth are at right angles to each other, the gravitational force is weak, causing abnormally low or “neap” tides. Between these two extremes are high or “perigee” tides when the moon is closest to the earth and low, or “apogee” tides when the moon is farthest from the earth.

Exercise 6: Identifying the main idea

Select the main idea of the passage from the options given.

1. One of the fastest swimmers of the seal family is the leopard seal, which is found in the Antarctic seas. This animal is a powerful predator that preys on penguins and other, smaller seals. Penguins are the fastest of all the swimming birds, so the chases between penguins and leopard seals may reach speeds of twenty to twenty-five miles per hour. Leopard seals also hunt penguins by leaping out of the water and capturing
them as they stand at the edges of ice floes. The explorers of the South Pole had a healthy respect for the leopard seal, which could mistake a human for a penguin and is said to have attacked unwary explorers.

The main idea of the paragraph is that ___.

A. the leopard seal is a powerful predator that hunts penguins and other seals
B. seals are fast and powerful hunters
C. the leopard seal is one of the fastest swimming seals

2. Shrews are famous for an appetite that is quite out of proportion to their size. These small but fearless mammals are very active and need to eat constantly in order to survive. They prey mainly on insects of all sizes and shapes, which they hunt by crawling and wriggling under old logs, through the leaf litter of the forest floor and even, in a few species, by diving into the water. One member of the shrew family, the white-toothed pygmy shrew, which is found throughout the African continent, is the smallest of all living mammals. This tiny predator rarely reaches two inches in length (from its nose to the base of its tail) and can squeeze through the tunnels created by large earthworms. It is so small and secretive that it has rarely ever been seen by humans.

The main idea of the paragraph is that ___.

A. shrews are small but active predators
B. shrews are constantly hunting insects
C. small mammals eat constantly

3. Vitamin E can be found in a number of foods. Vegetable oils, margarine, eggs and liver are especially good sources. This vitamin plays a role in the prevention of certain blood disorders. It helps to prevent cell membranes from being destroyed by substances that build up around the membranes and cause them to break down. These substances tend to increase in quantity as a person grows older. For this reason, vitamin E has been suggested as a remedy for the effects of aging. However, doctors and researchers are still studying the vitamin to find out if there is any real connection.

The main idea of the paragraph is that ___.

A. vitamin E may help to reverse the aging process
B. vitamin E, which is found in certain foods, prevents some blood disorders and the destruction of cell membranes
C. the healthiest remedies can often be found in natural substances

4. Whether you are right-handed or left-handed is decided by your brain. The human brain is divided into sections that control the functions of the body. One part of the brain, the cerebrum, controls the muscular movements of the body. The cerebrum is split into two halves, which are mirror-images of each other. One half controls the right side of the body, and its twin controls the left side. Nerve messages travel along pathways to reach the brain. These paths cross in the spinal cord, and therefore the
sensorimotor areas of each side of the cerebrum control the opposite sides of the body. So the right side of the cerebrum controls the left side of the body, and vice versa. In most people, the left side of the brain dominates the right side. It is because of this that most people are right-handed. So in people who are left-handed, the right side of the brain is dominant.

The main idea of the paragraph is that the ___.
A. brain is a complex organ that controls the body.
B. nerve pathways to the brain cross in the spinal cord
C. brain controls whether you are right-or left-handed.

Exercise 7: Identifying the details

The information that the writer uses to support his main idea is known as the details. These are more specific than the topic or the main idea. Can you recognize the statements which can be labeled details in the exercise below?

Quickly read the four statements in each group. Label each statement: T (=Topic), MI (=Main idea) or D (=Detail).

Group 1
A. Electrical failure is a constant concern to both engineers and ground control. ___
B. Problems with the NASA programme. ___
C. Technical problems have consistently delayed progress in the NASA space programme. ___
D. Fuselage leaks caused postponement of the latest shuttle flight. ___

Group 2
A. The technique involves inserting genetic instructions into the bacteria which follow the instructions. ___
B. Producing human insulin. ___
C. Humulin is the first substance made by gene-splicing approved by the US government for human use. ___
D. The instructions involve creating the two necessary ingredients to make insulin. ___

Exercise 8: Distinguishing major and minor details

In textbooks, you will find a lot of details which are sometimes very difficult to remember. You must learn to differentiate between major and minor details and only remember those that are significant in supporting the main idea. All details are not of equal importance as they depend on what point the author is making and what information is essential to develop, explain or prove that point. For example, in a passage about communication by sound, the reason a bird sings would be important but the age at which the bird learns to fly would be a minor
To determine which details are of major or minor significance, identify the author’s main point and then ask yourself the following questions:

What details are needed to explain or prove the main point?
What details are just included to make the passage more interesting?

Study the paragraph below and the way in which it is divided. The paragraph was taken from an article on hair growth.

1. The good biological news is that in the most common types of thinning, hair follicles don’t die. In classic male-female pattern hair loss (androgenetic alopecia), for instance, follicles become miniaturized and their growing phase abbreviated; they then produce extremely short, fine hairs. “Even guys who are bald still have little hairs on the top of their head,” explains Bruce A. Morgan of Harvard’s Cutaneous Biology Research Center. In a rarer condition, alopecia areata (affecting nearly 2 percent of people), the follicles’ growth phase ends prematurely under autoimmune attack, causing hair to fall out in patches or, in extreme cases, all over the body. But, again, the follicles survive.

From “Save the hairs!” by Mia Schmiedeskamp. Scientific American, June 2001, p. 76.

In this paragraph, we can identify the main idea:

In most common types of thinning, hair follicles don’t die.

which is supported by two important details:

- Androgenetic alopecia: follicles become miniaturized and growing phase abbreviated.
- Alopecia areata: follicles’ growth phase ends prematurely due to autoimmune attack.

Each major detail in turn has minor details which support it:

- Extremely short, fine hair is produced.
- Typical male-female hair loss.
- Hair falls out in patches or all over body.
- Only 2% of people affected.
2. Treatment for alopecia areata typically focuses on quelling the wayward immune system, but treatment for male- and female-pattern hair loss must increase the size of Lilliputian follicles as well as hair length. Minoxidil—introduced as Rogaine in 1988—was the first drug approved by the U.S. Food and Drug Administration for this purpose and is the only one licensed for use in both sexes. Scientists still debate how minoxidil, which is applied topically, produces thicker, longer hairs; perhaps it increases blood supply, better nourishing the follicles, or perhaps it alters cellular concentrations of substances that regulate hair growth.
Focus on text organization

Good reading means not only reading quickly, but understanding the way in which writers organize ideas and facts. They do this by using a pattern that allows them to achieve their purpose for writing the text. Let’s look at some of these patterns:

Simple listing: Facts or details are mentioned one after another to support the writer’s main idea. No fact is more important than the other.

Order of importance: Sometimes the author might want to stress some ideas more than others. In this case, the most important detail is first stated, then followed by a minor one. When we looked at the Topic and Main idea, we saw that this was a broad statement followed by support. On the other hand, the author might start with minor details, building up to the most important one which he wants you to remember. We saw this as reasons leading to a conclusion.

Chronological (= Time) order: Here, the events are given in the same order in which they occurred although sometimes the author may use “flashback” to talk about past actions that are affecting the present. Chronological order is also used when we describe a process and the order in which something is done.

Spatial order: Writers use this form when they need to describe a scene, a person or a piece of apparatus or equipment. This pattern also uses spatial order with order of importance as the writer may describe the most important details first. When writers describe something they sometimes also need to define the object and to some extent classify it.

Cause and effect: A cause is an event that makes another event occur. The result is the effect. Sometimes one cause may lead to several effects.

Comparison and contrast: Comparisons show the way in which things are alike, while contrast shows their differences.
We will discuss these and other patterns later on in more detail under the heading of **Focus on Rhetorical functions**.

For now, let’s look at a sample text and decide on the organization the writer has used.

There are many ways to build a fire. The basic rule to remember is that you set a match to tinder. You light the tinder, and the tinder makes the kindling burn. The heat from the burning kindling makes the larger firewood burn.

The following method usually works well. Place two logs together with tinder between them. Paper, twigs and bark are good for tinder. Next, place above the tinder a small handful of dry twigs or split softwood kindling. Then place small, dry logs over this base. Generally, no more than four logs are needed to make a good fire. To keep the fire going, push the ends of the logs into the flame from time to time. Add new logs to keep a flaming fire burning. Before adding logs, rake coals toward the front of the grate. Add the new logs at the rear of the fireplace. There they will reflect light and heat into the room.

1. In the first paragraph, the author arranges details by ____.
   A. order of importance
   B. spatial order
   C. cause and effect
   D. contrast

2. In the second paragraph, the author arranges details by ____.
   A. simple listing
   B. comparison
   C. cause and effect
   D. time order

3. Tinder is the first material used in building a fire because it ____.
   A. is easy to find
   B. gives off large amounts of heat
   C. is less expensive to use than kindling
   D. catches fire very easily

How has the author organized the information? Let’s look at the details. In the first paragraph, each sentence tells the way in which one part of the fire makes the other burn. The pattern used here is **cause and effect**. On the other hand, in the second paragraph, the author gives the steps for building a fire. Here, he is using **time order** to describe a process. Finally, in the last paragraph, find the details which support the statements. If you look back over the text, you will find that the author says paper, twigs and bark make fine tinder and that these burn easily.

Now, let’s practice topic, main idea and text organization by doing the following exercise.
Exercise 9: Text organization, topic, main idea

Read the paragraphs carefully and then select the best option from the ones given. Remember to ask yourself “What is being discussed?” to find the topic, “What is important about this topic?” to find the main idea, and “What information supports the main idea?” to get the details.

1. Most gemstones used in jewelry must be cut to reveal their full brilliance. In ancient times, a gemstone was treasured for its surface color rather than for its brilliance. Therefore, gems were merely polished and left in their natural state. The oldest type of gem cut that is still in use today is the cabochon, or rounded cut, introduced by the Romans. The cabochon was used for colored stones, such as the emerald, ruby, sapphire and garnet, but it is now used for starstones, cat's eyes, opals and imperfect stones. The art of faceting a gemstone, or cutting several flat surfaces on a gem, originated in India in the 15th century. The first faceted gems were diamonds that had been cut to disguise any flaws. In the early 17th century, the rose cut was invented. It revealed the fiery brilliance of a diamond for the first time and is still the standard cut for the diamond.

1. The topic of this paragraph as a whole is ___.
   A. the mining of precious stones
   B. gem cuts introduced by the Romans
   C. the surface color of gems
   D. the cutting of gemstones

2. The paragraph is organized as ___.
   A. a broad statement followed by support
   B. reasons leading to a conclusion
   C. introduction, main idea and supporting sentences
   D. a list of equally important statements

3. The author supports the main idea with ___.
   A. arguments in favour of using the cabochon cut
   B. expert advice about buying diamonds
   C. details about the history of gem cutting
   D. a comparison of precious and semiprecious stones

2. Many forces have been at work for a long time changing the face of the land upon which we live. These forces are the weather; water, both in the ground and on its surface; and living things. By “living things” we mean plants, animals, insects, worms and the very tiny creatures called bacteria, which make up for their smallness by their large numbers. If it were not for these forces, the land would be nothing but solid rock. It would not be able to support life. The work of all these forces on the Earth's surface is called erosion. One of these forces, however, running water, as in rivers, has done the most to change the surface of the land.

1. In this paragraph the topic that the author discusses is ___.
   A. landslides and rockslides
B. natural forces that wear away the land  
C. people’s misuse of the land  
D. the formation of rocks and soil

2. Which one of the following ideas supports the main idea?  
   A. Volcanoes add new rock to the Earth’s surface.  
   B. Water washes soil from the land.  
   C. Bacteria are the causes of some diseases.  
   D. Weather conditions vary enormously over the Earth.

3. The paragraph is organized as ___.  
   A. a broad statement followed by support  
   B. reasons leading to a conclusion  
   C. introduction, main idea and supporting sentences  
   D. list of equally important statements

3. To start a fire without matches, you can use sunlight, sparks, or the heat of friction. First find some dry tinder. Shelter the tinder from the wind and dampness. Some good tinders are lint from cloth, rope or twine, dry bark, powdered wood, birds’ nests and wood dust made by insects under the bark of dead trees. To start the fire with sunlight, use a camera lens, a lens from a binocular or a lens from a flashlight. The lens will focus the rays of the sun on the tinder and produce heat. To strike a spark, use flint and steel. Strike the steel against the flint. Let the sparks fall into the tinder. There are two methods of making heat from friction. The bow and drill method is a good one. Make a strong bow strung with a shoelace or string. Use it to spin a dry, soft shaft in a small block. This forms a black dust that will catch on fire. Use the wood friction method as a last resort. For this method, rub two sticks together as fast as possible until friction causes fire.

1. What is the topic of this selection?  
   A. Surviving in the woods  
   B. Starting a fire without matches  
   C. Planning for a camping trip  
   D. Keeping dry on a hike

2. The author develops the main idea by ___.  
   A. explaining how fires burn  
   B. proving that fire can be dangerous  
   C. suggesting ways to start a fire  
   D. warning the reader against traveling alone

3. The best title for the paragraph is ___.  
   A. The Many Uses of the Camera  
   B. How to Cook on a Campfire  
   C. Matchless Campfires  
   D. Play It Safe with Matches
Focus on reference words

You may understand all of the words in a sentence and still not understand what the writer wants to say. This might be because you did not pay attention to words which connect the ideas. We will call these reference words because they refer us to other parts of the text.

Instead of repeating the same noun over and over again, writers use pronouns to replace it. The pronoun must agree in number (singular / plural) with the noun it replaces and, if it is a personal pronoun, also in gender (masculine / feminine). Some of the most common pronouns used are: it, they, him, her, one, ones, another, others. Look at the example below.

Modern technology has dramatically changed the way we view the world. With air travel, satellite communication and computers, it seems a much smaller place these days.

What does ‘it’ refer to? In this context, the pronoun ‘it’ refers back to ‘the world’ in the previous sentence, that is, ‘the world’ is the referent for ‘it.’

Look at another example. The words in parentheses are the referents for the words in italics.

I lose so many things that I’m sure that they (things) just get up and walk away. I am jealous of people who are so orderly that they (orderly people) never lose anything.

Notice here that the plural pronoun ‘they’ replaces a plural noun (things, people). If it were replacing a woman, the pronoun used would be ‘she.’

Now continue with the rest of the paragraph.
Pens and pencils are never there when I need them (__________). I try to keep a pen near the telephone so that I will use it when the phone rings. But it is never there when I need it (__________). The situation was getting so bad that I decided to do something about it. I bought a large cupboard with a number of shelves. I then put ten boxes on them (__________). I put a label on each box: one (__________) I labeled “Pens and Pencils,” another (__________) I labeled “Tools,” another “Needles and Pins.” I also bought an address book and put it in the corner of the cupboard. Before this, I always lost all the addresses and phone numbers I needed. Now I felt very proud of myself. But things did not change. Pens began to disappear, and one day I found my hammer under the bed. There was only one solution. I locked the cupboard and put the key on top of it (__________). The cupboard was always locked and I was the only one who knew where the key was. Then I lost it (__________) . . .

Exercise 10: Understanding personal pronoun references

Part A. Read the paragraphs below. Find out what the underlined pronouns refer to. Look for the underlined pronouns and write their referent in the line provided.

1. In the United States, about 10 million computers are thrown away every year! Because most unwanted computers are sent to a dump, they (1) have caused a problem. The computer industry and the government are working on ways to solve it (2). They (3) have concluded that there must be changes in the way computers are built. They (4) must be made in ways that will allow their parts to be recycled. These parts include the electronic parts, the glass screen of the monitor and parts of the printer.
   1. they ________________  3. they ________________
   2. it ________________  4. they ________________

2. A pedicab is a small cab which is pulled by a bicycle. This human-powered transportation has been popular in Asian countries for many years. Two years ago, a local businessman decided to introduce it (1) in Denver, Colorado. So far, he (2) has four of them (3) on the road. He explained that they (4) do not take the place of taxis, because people use them (5) for short rides. The passengers are often people who don’t want to walk because they (6) are dressed in evening clothes.
   1. it ________________  4. they ________________
   2. he ________________  5. them ________________
   3. them ________________  6. they ________________
Part B. Read the story. Then decide what part of the text each underlined pronoun refers to.

APPOINTMENT IN SAMARRA

Somerset Maugham

There was a merchant in Baghdad who sent his servant to the market to buy provisions and in a little while the servant came back, white and trembling, and said, “Master, just now when I was in the market-place, I was jostled by a woman in the crowd and when I turned, I saw it was Death that jostled me. She looked at me and made a threatening gesture. Please lend me your horse and I will ride away from this city and avoid my fate. I will go to Samarra and there Death will not find me.”

The merchant lent him his horse and the servant mounted it and he dug his spurs into its flanks and as fast as the horse could gallop he went.

Then the merchant went down to the market-place and saw Death standing in the crowd and he came to Death and said, “Why did you make a threatening gesture to my servant when you saw him this morning?” “That was not a threatening gesture,” Death said. “It was only a start of surprise. I was astonished to see him in Baghdad, for I had an appointment with him tonight in Samarra.”

1. his refers to:
   A. the servant   B. the merchant   C. Baghdad   D. the market

2. I refers to:
   A. the servant   B. the merchant   C. the reader   D. the market

3. She refers to:
   A. the servant   B. the merchant   C. Death   D. Baghdad

4. Your refers to:
   A. the servant   B. the merchant   C. the horse   D. the woman

5. it refers to:
   A. the servant   B. the merchant   C. Death   D. the horse

6. his refers to:
   A. the servant   B. the merchant   C. the horse   D. the woman

7. he refers to:
   A. the servant   B. the merchant   C. the market   D. the woman

8. you refers to:
   A. the servant   B. the merchant   C. Death   D. the horse
9. **him** refers to
   A. the servant   B. the merchant   C. Death   D. the woman

**Part C.** Read the selection and answer the questions.

Thomas Jefferson's liberal views of democracy were first proposed in his draft of the Bill of Rights in 1776. Unfortunately, the Virginia Convention used only the preamble of this draft in the more conservative document that they accepted, which had been drafted by George Mason. Much of what Jefferson wanted was, however, obtainable as ordinary legislation and when he took his seat in the new legislature, it was with a view of putting through a definite program of reforms. In this he had the support of such men as Mason, George Wythe, and James Madison, against the strenuous opposition of such leaders of the old order as Edmund Pendleton and Robert Nicholas Carter. These men had much to lose if Jefferson's ideas were carried out.

1. The words ‘this draft’ in line 3 refer to ___.
   A. the draft Jefferson wrote
   B. the draft that George Mason wrote
   C. the preamble
   D. the draft that was accepted

2. The pronoun ‘he’ in line 5 refers to ___.
   A. George Mason
   B. Thomas Jefferson
   C. a member of the Virginia Convention
   D. a member of the legislature

3. The pronoun ‘this’ in line 6 refers to ___.
   A. the implementation of the Bill of Rights
   B. the acceptance of Jefferson’s original draft
   C. putting through a program of definite reforms
   D. carrying out Jefferson’s liberal views


**Exercise 11: Understanding other references**

Besides pronouns, authors also use other types of words and even phrases to make references. As long as these phrases mean the same thing in the context as their referent does, they can be used as effective references. Look at the following example:

The monkey’s most extraordinary accomplishment was learning to operate a tractor. By the age of nine, the monkey had learned to solo on **the vehicle**.

We know that a tractor is a kind of vehicle: the lexical equivalence between these two concepts allows the author to use ‘the vehicle’ as an adequate reference to ‘a tractor’ in the context.

Now look at the examples below and identify the referent of the italicized words.

1. They regularly get The Daily Courier. I wouldn’t read such a paper.

2. She wrote a short novel in 1989. That very book was to bring her fame some years later.

3. Gerry Nichol and Bob Smith were at the conference. The former gave an outstanding demonstration of his new theory. The latter, though, failed at convincing the audience about his latest results.

4. Dr. Lee’s project got ten thousand dollars on grant money. Prof. Green’s received a similar amount.

Focus on inferences

Now that we’ve looked at the way the author communicates his or her ideas through main ideas and details and their organization in the text, let’s turn to information that is not explicitly stated. Sometimes the author of a text does not state an idea directly, but you, the reader, can understand that the idea follows logically from what the writer does say. The inference is suggested from the facts. Let’s look at this example:

Mrs. Jones put on her rain coat and rain hat and picked up her umbrella before she went out.

We know that ____________________________________

We can infer that ____________________________________

Practice in recognizing logical inferences is important for good reading. You need to be aware of the inferences you make while reading and learn to check them automatically for support. Ask yourself “What can I logically infer from this information?” Be careful, do not make assumptions that are not supported by the explicit information in the text!!

Let’s look at some other examples.

Subsequent technological developments have replaced vacuum tubes by transistors and then by printed circuits and microchips. Thus, the size of the modern computers has been greatly reduced, and the speed greatly increased from the ones that John von Neumann helped to develop.

What can we infer from this paragraph?

A. Transistors, printed circuits and microchips have replaced vacuum tubes in computers.
B. Transistors, printed circuits and microchips are smaller and faster than vacuum tubes.
C. von Neumann helped to develop computers.

If you chose option B, you were correct. Both options A and C are stated in the text. More importantly, if printed circuits and microchips have replaced vacuum tubes in the first computers and if modern computers are smaller and faster than the older ones, we can infer that printed circuits and microchips are indeed smaller and faster than vacuum tubes. Now look at this other example.

According to Jared Diamond, the author of “The Worst Mistake in the History of the Human Race,” one of the bad results of the adoption of agriculture is that people became shorter than their ancestors were.

Which of the following can we infer?

A. After the adoption of agriculture, people were not as tall as their ancestors were.
B. The author thinks that being as tall as, or taller than, other ancestors is good.
C. Jared Diamond wrote the “The Worst Mistake in the History of the Human Race.”

Which two options did you discard? ___ and ___.

Why? ________________________________________________________________

Let’s start by identifying statements that can be inferred from a passage. Remember to ask yourself “What information in the text supports this inference?”

**Exercise 12: Identifying inferable information**

Read the following passages and circle ALL of the statements that can be inferred from each.

1. A good source of vitamin B is kale. Spinach and escarole are other green leafy vegetables that provide this essential vitamin. Enjoy your daily salad and you’ll have your vitamin B as well.
   
   A. Kale is a green leafy vegetable.
   B. Vitamin B is the most essential vitamin.
   C. Eating salad will guarantee good health.
   D. Kale, spinach and escarole can be used in salads

2. The fossils that have led to this new view of dinosaurs as migratory creatures have been found in Alaska, Canada, Greenland and the former Soviet Union, as well as in
Antarctica and Southern Australia. At the time dinosaurs thrived near the poles; conditions there were radically different from those today. The planet was warmer, especially in these polar areas.

A. Dinosaurs are usually thought of as sedentary creatures.
B. Dinosaurs migrated from Alaska to Australia.
C. The fossils have been found in polar regions.
D. The temperature at the poles today is cold.

3. Fundamental to the theory of plate tectonics is the assumption that while all the plates seem to be moving at different relative speeds—ranging from a fraction of an inch to a maximum of five inches a year—the whole jigsaw puzzle of plates is interlinked. No one plate can move without affecting others, and the activity of one can influence another thousands of miles away. The Atlantic Ocean could not be getting wider—as it is with the spreading of the African Plate away from the South American Plate—if the Pacific sea floor were not being consumed in deep oceanic trenches faster than it is created at the Pacific ridges. The plates move rapidly by geological standards; two inches per year—to pick a typical speed—up to 30 miles in one million years. It took only 150 million years for a mere fracture in an ancient continent to turn into the Atlantic Ocean.

A. As the Atlantic is getting wider, the Pacific Ocean is getting narrower.
B. Plate tectonics is a complex, interrelated system.
C. Where the Atlantic Ocean is today, there used to be a continent.
D. Geological standards of time are faster than normal standards of time.

Exercise 13: Justifying the logic behind your inference

The following sentences were taken from a text entitled “Euthanasia”. Carefully read each one and then circle the option that best expresses the inference that can be made logically from the information given in the original sentence(s). Explain your choice.

1. Various physicians oppose euthanasia on the grounds that it is contrary to the Oath of Hippocrates that all doctors must take. Others suggest that the Hippocratic Oath is outdated or easily misinterpreted.

The “others” mentioned in the quote ___.
A. support euthanasia because of the Hippocratic Oath
B. oppose euthanasia because of the Hippocratic Oath
C. don’t think that the Hippocratic Oath is sufficient reason to oppose euthanasia.

I chose this option because ________________________________
2. Cardinal Villot, Vatican Secretary of State, summarized a letter to the International Federation of Catholic Medical Associations in 1970 indicating that medicine is at the service of man. Man, on the other hand, is not an instrument for medical science. He thinks that ___.

A. doctors should learn more about medicine from patients who are kept alive artificially  
B. some doctors keep some patients alive partially so they can learn more about medicine  
C. doctors must do everything they can to keep their patients alive

I chose this option because ________________________________

3. Dr. Robert Morse, a neurologist in charge of her case, maintained that Karen Quinland was not brain dead. He referred to the Ad Hoc Committee of Harvard Medical School Criteria as the ordinary medical standard for determining brain death. Karen Ann Quinland satisfied none of these criteria. She reportedly did not have a completely flat EEG, and she did exhibit involuntary muscle activity.

From this paragraph we can infer that ___.

A. Dr. Morse thinks that a person must not be considered alive if that patient is not brain dead.  
B. One of the criteria for being considered brain dead is to exhibit involuntary muscle activity  
C. A person considered brain dead has a completely flat EEG and no involuntary muscle activity.

I chose this option because: ________________________________

The above exercise was adapted from Laura Donahue Latulippe, Developing Academic Reading Skills, Regents Prentice Hall, 1987

Exercise 14: Identifying the correct inference

Now read the following extracts and select the best option.

1. As recently as two or three hundred years ago, visitors from space could have landed on 90 percent of our planet and human kind would never have noticed it. If one searches through old newspapers and local records, one can find many reports of strange incidents that could be interpreted as visits from outer space. A stimulating writer, Charles Fort, has made a collection of UFO (Unidentified Flying Object) sightings in his book Lo! One is tempted to believe them more than any modern reports, for the simple reason that they happened long before anyone had ever thought of space travel. Yet at the same time one cannot take them too seriously, for before scientific education was wide-spread, even sightings of meteors, comets, auroras and so on gave rise to the most incredible stories, as they still do today.
You can infer that the author thinks that ___.
A. observations of UFOs are unreliable
B. visitors from space could not live on Earth
C. visitors from space have landed on Earth
D. no civilizations could exist on other planets

What certain inference can you make about the motives of interplanetary visitors to Earth?
A. They would come to make war.
B. They would come to live in peace
C. They would come for scientific exploration.
D. No certain inference can be made.

The author suggests that modern education has ___.
A. decreased the tendency to interpret natural objects as UFOs
B. increased the number of UFO sightings
C. forced us to believe in UFOs
D. solved the age-old mystery of UFOs

2. Animals in the desert have a problem getting water and keeping it. Insect eaters get their liquid from their food. Many desert animals have an additional source of water through the breakdown of body fat. Lizards, for example, store fat in their tails much as the camel stores fat in its hump. Most desert dwellers avoid the drying heat as much as possible, spending their time in burrows, where the damp earth and the coolness cut down the amount of evaporation from their breathing. With the exception of the coyote, which is apt to have its home in the shelter of rocks or in dense vegetation, nearly all mammals have burrows of one sort or another. All birds seek whatever shade they can find. Reptiles have an added reason for avoiding the desert sun. They are cold-blooded creatures that lack the protection of fur, feathers and other cooling devices. They can be killed by a relatively short exposure to full sunshine.

As a whole the paragraph suggests that ___.
A. desert animals survive without water
B. desert animals are cold-blooded
C. animals adapt to their surroundings
D. heredity does not affect survival

The opening sentence supports the inference that in a desert ___.
A. animals live short lives
B. water cannot be found
C. rain never falls
D. water is scarce and evaporates quickly

The author suggests that in the desert ___.
A. reptiles are harmful during daylight
B. only birds hunt during the heat of the day
C. coyotes are vegetarians
3. Weather routing is, simply, a method of planning a course of travel around and through bad weather. Generally, it means choosing the course that is shortest in terms of time and lowest in terms of risk. Weather routing is an instrument of control and efficiency in navigation, a means to greater safety and speed. In recent years weather routing has been very much refined, yet as an idea, it is not new. People have long been helpless before the weather and, like other creatures, have withdrawn in fear and simply suffered through catastrophes. Those people most exposed suffered most, and they were mariners. But centuries of ill-tempered skies and quiet seas taught them both caution and courage. They understood the wind’s message and faced with confidence or feared with reason the motions of the sea and sky.

The paragraph suggests that the key to safe travel is ___.

A. understanding the weather and careful planning  
B. simple luck and optimism  
C. light winds and clear skies  
D. a combination of fear and confidence

It can be inferred from the paragraph that weather routing ___.

A. does away with all known dangers  
B. is opposed by pilots and navigators  
C. is not a guarantee against all risks  
D. was practiced by early mariners

It can be inferred from the paragraph that travel becomes safer as ___.

A. people learn not to fear storms  
B. the science of weather forecasting progresses  
C. people withdraw from their environment  
D. mariners’ caution and courage increases
Focus on vocabulary

When you read in English, you will find that there will be a list of basic words that occur again and again in your textbooks and the articles you may read. You will need to understand the various definitions of each word and be familiar with appropriate synonyms that an author might use instead of repeating these words. In order to know a word well, you should:

Learn how to use your English-English dictionary.

Learn various forms (verb, adjective, adverb, noun) of words.

Learn the words that are related because they come from the same stem (or root). Here you’ll study prefixes and suffixes.

Recognise the correct meaning of a word according to the context in which it appears.

Learn that a word may have different meanings according to its context.

Learn synonyms (words that mean the same thing) and antonyms (words that have the opposite meaning) of the word.

Identify cognates, words that look similar to Spanish words and mean the same, and false cognates, words which may look like Spanish but have a completely different meaning.

Learn how signal words are used in a sentence.

But before starting our study of vocabulary, let’s take a look at these strategies. You’ve already taken the reading strategies survey; now it’s time to turn to vocabulary learning. This is very important for reading as the more words you know, the less dependent you'll become on the dictionary. So, how do you learn vocabulary? Do you look up the meaning of unknown words in the dictionary,
Vocabulary strategy survey

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Yes</th>
<th>Useful</th>
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<tbody>
<tr>
<td>Analyse the part of speech of the word</td>
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<tr>
<td>Check for Spanish cognate (words that look the same in Spanish)</td>
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<tr>
<td>Use the pictures to guess and then learn the meaning of the word</td>
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<tr>
<td>Guess the meaning from the context in which it is used</td>
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<td>Use a bilingual dictionary</td>
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<tr>
<td>Use a monolingual dictionary</td>
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<tr>
<td>Use word lists and learn the meaning of the words in them</td>
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<tr>
<td>Use flash cards</td>
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<tr>
<td>Ask your teacher for a translation of the word into Spanish</td>
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<tr>
<td>Ask your teacher to paraphrase or use a synonym of the new word</td>
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<tr>
<td>Ask your teacher for a sentence including the new word</td>
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<tr>
<td>Ask your classmates to tell you the meaning of the word</td>
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<tr>
<td>Study the word with a pictorial representation of its meaning</td>
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<tr>
<td>Make a mental picture of the meaning of the word</td>
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<tr>
<td>Connect the word to a personal experience you have had</td>
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<tr>
<td>Connect the word to its synonyms and antonyms</td>
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<tr>
<td>Use semantic maps</td>
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<td>Use &quot;scales&quot; for gradable adjectives</td>
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<tr>
<td>Group words together to study them</td>
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<tr>
<td>Use new words in sentences of your own</td>
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<tr>
<td>Study the spelling of a word</td>
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<tr>
<td>Study the sound of a word</td>
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<tr>
<td>Say the new word aloud when studying it</td>
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<tr>
<td>Make a mental picture of the way in which the word is formed</td>
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<tr>
<td>Underline the initial letter of the word</td>
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<td></td>
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<tr>
<td>Paraphrase the word’s meaning (say it in other words)</td>
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</tbody>
</table>
Strategy (cont’d)  Yes  Useful
Learn the words of an idiom together..................................................  □  □
Use physical action when learning a word...........................................  □  □
Write the word several times until you learn it.....................................  □  □
Repeat the word several times until you learn it ..................................  □  □
Take notes in class ............................................................................  □  □
Use the vocabulary section in your textbook ......................................  □  □
Put English labels on physical objects..................................................  □  □
Keep a vocabulary notebook .................................................................  □  □
Use English-language media (listen to songs, go to movies, etc.) ......  □  □
Give yourself a test of the new words you have learnt.......................  □  □
Continue to study the word even after you think you know it .........  □  □

One of the most useful tools for vocabulary learning is the dictionary. Although it may sound silly, you need to know how to locate words in the dictionary. So let’s start by taking a brief quiz.

The alphabet

Exercise 15: Alphabet trivia quiz

One of the skills you have to learn when using the dictionary is to find the word as quickly as possible. For this, you need to know the alphabet. Let’s see how much you know. Take this quiz and find out.

How many letters are there in the English alphabet?

How many vowels and how many consonants are there?

What are the three most common letters at the beginning of words?

Look in your dictionary and see which letters have the most pages.

What are the three least common letters at the beginning of words?

Look in your dictionary and see which letters have the fewest pages.
Exercise 16: Putting words in alphabetical order

To find words in the dictionary, you need to know alphabetical order. Place these words in the correct order by numbering them. The first one is done for you.

Teacher  ___  Student  ___  Textbook  ___  Pen
Classroom  ___  Test  ___  Pencil  ___  Study
Course  ___  Learn  ___  Blackboard  ___  Revision

Using the dictionary

_Dictionaries are like watches; the worst is better than none, and the best cannot be expected to go quite true._

Samuel Johnson

With a bit of practice your dictionary can become a useful tool. Here are some things to remember.

First of all, words are found in the dictionary in alphabetical order, so being able to classify and alphabetize words are important skills for you to develop.

The guide words, the boldfaced words at the top of the pages, allow you to find words quickly and efficiently. In our sample page, on page 49 the guide words defective / deg. indicate that the first word you will find on that page is ‘defective’ and the last, the abbreviation ‘deg.’ So if you are looking for the word ‘deflate,’ you know you will find it on this page, but not the word ‘desire.’

Dictionaries also give the phonetic transcription of words and if you know how to read phonetically, this can help you learn to pronounce the words correctly. Look at the way ‘define’ is pronounced (dɪ’fain).

Prefixes and suffixes are also indicated. These help you to expand your vocabulary.

Your dictionary will show you how to separate words at the end of a line. For example, the word ‘defenselessly’ can be broken at any one of the points indicated by hyphens as in the example: de-fense-less-ly. Although in today’s world of word processors this may seem unimportant, it is good for Spanish speakers to know that Spanish separation rules do not apply.

Words are also classified according to their part of speech, i.e., n (noun), vt (transitive verb), etc. so it’s important for you to select the correct part of speech when looking up a word. Common dictionary abbreviations and parts of speech will be reviewed later on in this section.
Once you have found the word you are looking for, keep in mind that one word may have **several meanings**. Good dictionaries usually give sample sentences using the word. Look at the way the word ‘defense’ is used on our sample page.

Although dictionaries give **synonyms** of words, there is always a slight difference in meaning between them. Some words are more formal than others (‘seek’ as opposed to ‘look for’) or words may be used as a different set expression (consider the use of ‘freedom’ and ‘liberty’). Look at these examples:

> Columbus was *seeking* a new route to the East.  
> **vs**  
> We are *looking for* a new house.

> They are fighting to protect their *freedom of speech*.  
> **vs**  
> You are *at liberty to* leave when you want.

Dictionaries can also help you with your **spelling** and **irregular verbs** and **plurals** are found in the appendix section of most good dictionaries.

Extra, extra important!!! **The meaning of the word depends on the context in which it is used.** If you spend too much time looking for words in the dictionary, you might forget the context and choose the incorrect meaning. Remember, **you are the master and the dictionary, your slave.** Learn to use your dictionary well.

Let’s become acquainted with a page from a dictionary, in this case *The Oxford ESL Dictionary* by A.S. Hornby and C.A. Ruse, but a similar page from any dictionary will do.
defec-tive /defek-tiv/ adj imperfect; faulty: ~ in workmanship/moral sense.
defec-tive-ly adv
defec-tive-ness /-nis/ n [U]
defend /dɪfend/ vt 1 guard; protect from danger: to ~ one's country against enemies. 2 speak or write in support of: ~ (~ uphold) a claim; ~ an accused person in court.
defend-ant /dɪfendənt/ n [C] person against whom a legal action is brought. ~ plaintiff.
defender /dɪfendər/ n 1 person who defends. 2 (sport) player who guards his area against attacks from the other side.
defence /dɪfəns/ 1 [U] defending from attack; high ~ against attack: money needed for national ~. 2 [C] something that defends or protects; means of defending: People used to build strong walls around their towns as a ~ against enemies. 3 (defensive) (adj) of argument(s) used to contest an accusation: The accused man made no ~. (b) (collect) the lawyer(s) acting for an accused person.
defenseless adj without defense; unprotected.
defenselessly adv
defenselessness /-nes/ n [U]
defensible /dɪfənsəbl/ adj able to be defended.
defensive /dɪfənsɪv/ adj used for, intended for, defending, ~ warfare/measures. ~ in the defensive, state or position of defense.
defensively adv
defend' /dɪfend/ vi (−tt-) 1 put off to a later time: to ~ one's departure for a week. 2 grant a delay in being drafted(2).
defense n [C] act of defending(2).
defend'or /dɪfendər/ vi (−tt-) give way; yield (often to show respect): to ~ to one's elders/to his opinions.
defen-sance /dɪfənsəns/ n [U] giving way to the wishes, accepting the opinions or judgments of, another or others; respect: to show ~ to a judge. in defence to, out of respect for.
defen-sive /dɪfənsɪv/ adj showing respect.
defensively adv
defence /dɪfəns/ n [U] open disobedience or resistance; refusal to recognize authority; denying. in defiance of, showing contempt or disregard: to act in ~ of orders.
defiant /dɪfə vant/ adj showing defiance; openly disobedient.
defiantly adv
defi-ciency /dɪfɪsənsi/ n (pl -s) [U] the state of being short of, less than, what is correct or needed. 2 [C] instance of this: suffering from a ~ of food. 3 [C] amount by which something is short of what is required or needed: a ~ of $15. 4 [C] something imperfect: Cosmetics do not always cover up the deficiencies of nature.
deficient /dɪfɪsənt/ adj not having enough of: ~ in courage; a mentally ~ person, one who is mentally subnormal.
deficit /dɪfɪsɪt/ n [C] amount by which something, esp a sum of money, is too small; amount by which expenses exceed income.
defile /dɪfə l/ vt (pres p defiling /dɪfə ling/) make dirty or impure: rivers ~d by waste from factories; to ~ one's mind.
define /dɪfain/ vi 1 state the meaning of (eg words). 2 state or show clearly: The powers of a judge are ~d by law. 3 fix or mark the limits of.
defin-able adj
defined /dɪfəndɪt/ adj 1 clear; not doubtful or uncertain. I want a ~ answer. "Yes" or "No." 2 having distinct limits: a ~ period of time, the ~ article, the word "the." definit-ely adv (a) in a definite manner. (b) (informal) (in answer to a question) yes, certainly.
defini-tion /dɪfənʃən/ n [U] defining. 2 [C] statement that defines: To give a ~ of a word is more difficult than you think. 3 [U] clarity of outline. 4 [U] action or power of making clear and distinct.
definitive /dɪfɪnɪtɪv/ adj decisive; without the need for, or possibility of, change or addition: a ~ offer/answer.
deflate /dɪflæt/ vi 1 make (a tire, balloon, etc) smaller by letting out air or gas. 2 (fig) lessen the conceit of: ~ a pompous politician. 3 take action to lower or keep steady the prices of salable goods. ~ inflate.
deflation /dɪfləˈkeɪʃən/ n [U] the action of deflating; state of being deflated. (b) (collect) the lawyer(s) acting for an accused person.
deflationary /dɪfləˈkeɪʃənærɪ/ adj, caused by, deflation.
deflect /dɪflekt/ vi, vt (cause to) turn aside (from): The bullet struck a wall and was ~ed from its course.
deflection /dɪflektʃən/ n [C,U]
defoliate /dɪfə lət/ vt cause (a tree, plant) to lose its leaves, esp by chemical means.
deforestry /dɪfə rəˈstri/ n [U] spoiling the form or appearance of; put out of shape.
deform /dɪfɔrm/ vt badly or unnaturally shaped: The boy has a ~ed foot and cannot play games.
deformity /dɪfɔrˈmi tɪ/ n [U] being deformed. 2 [C] (pl -ies) deformed parts (esp of the body).
defraud /dɪfrəud/ vt trick (a person) out of something.
defray /dɪfri/ vt supply the money needed; pay (the expenses) for something.
defrayal /dɪfri əl/ n [U]
defrost /dɪfrɔst/ vi, vt remove, get rid of, ice, frost, or condensation (eg in a refrigerator, on the windscreen of an automobile, etc). 2 thaw out.
defroster /dɪfrɔster/ n [C] mechanism, etc that defrosts.
deficit /dɪfɪsɪt/ adj quick and clever (esp with the fingers).
deficiency adv
deficiency /-nis/ n [U]
defunct /dɪfʌŋkt/ adj dead; no longer in existence.
defuse /dɪfjuːz/ vt remove or make useless: the fuse of eg an unexploded bomb or shell.
defy /dɪfərvi/ vi (pres pp -ied) 1 resist openly; refuse to obey or show respect to: to ~ one's superior(s). 2 have the power to resist; withstand. (problem) defy solution, could not be solved = dāre 2 (the usual word).
deg. abbr = degree(1,2).
Parts of speech

If you quickly look over our sample dictionary page, you will notice that there are many abbreviations that are related to the part of speech of the word. Let’s have a quick review of the most common ones.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Part of speech</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>Noun</td>
<td>This represents a: person — doctor place — London thing — shoe idea — defiance (found on sample page)</td>
</tr>
<tr>
<td>v</td>
<td>Verb</td>
<td>This is a word or group of words that indicate an action is taking place. The settlers defend their town against invaders.</td>
</tr>
<tr>
<td>vt</td>
<td>Transitive verb</td>
<td>Transitive verbs indicate what the subject of the sentence does to someone or something (object). Microwave ovens quickly defrost frozen food.</td>
</tr>
<tr>
<td>vi</td>
<td>Intransitive verb</td>
<td>Intransitive verbs tell what the subject does but in this case the action does not affect anyone or anything. It does not need an object to receive the action. The boy jumped in the air and shouted. Many verbs can be either transitive or intransitive. The heat defrosted the meat. (transitive) The meat defrosted. (intransitive)</td>
</tr>
<tr>
<td>adj</td>
<td>Adjective</td>
<td>This gives us more information about a noun or a pronoun. For example, an adjective can describe, explain, limit, or specify the noun. It’s time to give a definite answer to that question.</td>
</tr>
<tr>
<td>adv</td>
<td>Adverb</td>
<td>An adverb describes or modifies a verb, adjective or another adverb. He spoke deferentially. (modifies the verb ‘speak’) She is definitely rich. (modifies the adjective ‘rich’) The job is very nearly completed. (modifies the adverb ‘nearly’)</td>
</tr>
</tbody>
</table>
Conjunction
Conjunctions connect individual words or group or words.

I decided to go to the beach although it was raining

Preposition
This is a word or a group of words that shows the relationship between the object that follows the preposition and another word in the sentence.

Paul parked the car under the bridge.

Pronoun
This is a word used to replace a noun, a group of nouns, some other pronouns, and even longer phrases.

The students were anxious about their final grade. Their teacher said she would speak to them after class.

Let’s look at the sentence below. The word ‘import’ can be used either as a verb or a noun.

Japan imports large amounts of oil in order to keep its society running, but oil is only one of the imports that are necessary to this country’s economy.

*The Random House Dictionary of the English Language* (New York, Random House, 1969), defines ‘import’ in the following way:

import – v.t. 1. to bring in (merchandise, commodities, etc) from a foreign country for sale, use, processing, or re-export. 2. to bring or introduce from one use, connection or relation to another (foreign bodies imported into the blood, foodstuffs imported from the farm). 3. to convey as meaning or information, as by words, statements, actions, etc. (her words imported a change of attitude). 4. to involve as a necessary circumstance imply (religion imports belief). 5. (Rare) to be of consequence or importance; concern, v.i. 6. to be of consequence or importance; matter. n. 7. that which is imported from abroad; an imported commodity or article. 8. the act of importing or bringing in; importation, as goods from abroad (the import of foreign cars). 9. purport (he felt the import of her words). 10. consequence or importance (matters of great import).

These are the meanings for import; however, the word has other forms as well. The adjective for definition 7 is ‘importable,’ and the adjective for definition 10 is ‘important.’ There are other nouns in this group of related words (‘importer,’ one who imports something; and ‘importability,’ the ability to be imported) and we can speak of ‘imported’ goods, taking the past participle form of the verb and using it as an adjective.

In addition to the different forms (parts of speech) of a word, there are often other related words (words that come from the same root or stem). ‘Import’ comes from
the root *port*, which means ‘to carry.’ *Im*– is a prefix (a word part added before the stem of a word to change its meaning) that is added to port to change its meaning from ‘to carry’ to ‘to carry into.’ If we change the prefix to *ex*– the word (export) means ‘to carry out.’ Other words that are related to import include ‘transport’ (to carry across), ‘report’ (to carry back), ‘porter’ (a person who carries luggage at a hotel or train station), and ‘deport’ (to carry off, to expel from the country).

As you learn more and more words and increase your vocabulary, there are two ways you can find related words: first, you can look for all of the other forms of the same word (i.e. the noun, verb and so on); then, you can find the words that come from the same stem or root, like the examples in the paragraph above. Finally, once you know the meaning of some words, you can find those that relate to them because they have a similar meaning (synonyms) or opposite meaning (antonyms). For example, once you know the meaning of a word like *rich*, you can learn its opposite, *poor*. Authors will substitute synonyms for the words they originally use to provide variety, so you, the reader, must be able to recognise these substitutions.

**Exercise 17: Working with parts of speech**

Read the selections below on the development of computers. Then fill in the chart with the appropriate part of speech, meaning and related words of the *italicized* word. Use your monolingual English dictionary to help you. The first one is done for you. How did you identify the part of speech of the italicized words?

1. The tools of communication, from pencil and pen to television, are designed to serve our minds. These *devices* transmit information or preserve it, but they do not modify it in any way.

2. The widespread use of machines for information *processing* is a modern development. But simple examples of information-processing machines can be traced back to ancient times.

3. Babbage set out to build a machine that not only would *calculate* the entries in the tables but would print them automatically as well. He called this machine the Difference Engine, since it worked by solving what mathematicians called “difference equations.”

4. This was particularly true since Babbage’s design was grandiose. For instance, he planned for his machine to do calculations with fifty-digit accuracy. This is far greater than the accuracy found in most modern computers and far more than is needed for most calculations.

5. A hundred years passed before a machine like the one Babbage *conceived* was actually built. This occurred in 1944 when Howard Aiken of Harvard University completed the Harvard Mark I Automatic Sequence Controlled Calculator.
6. ENIAC—Electronic Numerical Integrator and Computer—was the machine that rendered the electromechanical computers obsolete. ENIAC was the first of many computers with acronyms for names.

<table>
<thead>
<tr>
<th>Word</th>
<th>Part of speech</th>
<th>Meaning (as used in paragraph)</th>
<th>Related words</th>
<th>Synonym(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>devices</td>
<td>Noun</td>
<td>Thing that are made usually for a particular purpose; an invention, especially a mechanical or electrical one</td>
<td>deviceful (adj) devicefully (adv) devicefulness (n)</td>
<td>gadget</td>
</tr>
<tr>
<td>processing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>calculate</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>accuracy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>conceived</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>obsolete</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Evaluating your dictionary

It's very important for you to have a good dictionary. But what do we mean by “good”? Can you find the answers to these questions by looking through your dictionary?

Let’s begin by writing its name: ________________________________________
Now, evaluate it!

1. When was it published? _______________________________________

2. Where was it published? _______________________________________ 

3. When was Einstein born? _______________________________________

4. What is Laplace famous for? ___________________________ 

5. The word ‘reconcile’ can only be divided in one of the following ways:  
   A. re-con-cile          B. rec-on-cile             C. re-conc-ile     D. rec-onc-ile

6. What is the plural of the word ‘antenna’? _______________________

7. Which of the following words has a Greek origin?  
   A. eject                B. elbow                  C. elder             D. electric

8. Explain the meaning of the phrase “eat humble pie”:  
   ___________________________________________________________

9. Which has a larger population?  A. Nagasaki             B. New Orleans  

10. Which of the following words can only be used as an adjective?  
    A. hurdle            B. humorous            C. hungrily          D. hunt

11. Give a definition of the word ‘lorry’ which is only used in Britain.  
    ___________________________________________________________

12. Give a slang definition of the word ‘cool’.  
    ___________________________________________________________

13. Does your dictionary include . . .  
    . . . a periodic table of elements?      Yes ☐ No ☐  
    . . . a table of weights and measures?    Yes ☐ No ☐  
    . . . punctuation rules?                 Yes ☐ No ☐  

So, what do you think about your dictionary?
Identifying specialized fields

When you read scientific and technical literature, you have to be aware of special meanings that words may have when used in different fields. Your dictionary may have information about this. If you look carefully, you should find a guide to the abbreviations used for identifying specialized fields. See if you can find this information to do the following exercise.

Exercise 18: Identifying specialized fields

Write the abbreviation that your dictionary uses for each of the following fields.

<table>
<thead>
<tr>
<th>Field</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>____________</td>
</tr>
<tr>
<td>Philosophy</td>
<td>____________</td>
</tr>
<tr>
<td>Geophysics</td>
<td>____________</td>
</tr>
<tr>
<td>Physics</td>
<td>____________</td>
</tr>
<tr>
<td>Mechanics</td>
<td>____________</td>
</tr>
<tr>
<td>Engineering</td>
<td>____________</td>
</tr>
<tr>
<td>Thermodynamics</td>
<td>____________</td>
</tr>
<tr>
<td>Genetics</td>
<td>____________</td>
</tr>
<tr>
<td>Mathematics</td>
<td>____________</td>
</tr>
<tr>
<td>Chemistry</td>
<td>____________</td>
</tr>
</tbody>
</table>

Now, use your dictionary to look up the italicized words in the sentences below. In the space provided, write the definition that applies. If the definition applies to a particular field, as noted in the dictionary, write down the field as well as the part of speech of the word in the given context. The first one has been done for you.

1. A corollary of this is that when enough is known of the chemistry and physics of vital phenomena, it may be possible to synthesize living matter.

   Word: synthesize Part of speech: Verb
   Special field: Chemistry
   Definition: To produce by synthesis rather than by extraction

2. Organisms such as cats, clams, and cicadas are clearly recognizable as animals but sponges, for example, were considered to be plants until well into the 19th century. Sponges are single-celled organisms which, even today, are called animals by zoologists, plants by botanists, and protists by others.

   Word: sponges Part of speech: ____________________________
   Special field: ____________________________
   Definition: ____________________________

   Word: protists Part of speech: ____________________________
   Special field: ____________________________
3. Elaborate physical and chemical equipment and substances labelled with radioactive or stable isotopes are used to trace in detail the paths of metabolism and their respective quantitative importance to the animal or plant under investigation.

Word: **trace**
Part of speech: ___________________________
Special field: ___________________________
Definition: ___________________________

4. Complex compounds of one sort may be broken down and their parts recombined in new ways to yield new compounds.

Word: **yield**
Part of speech: ___________________________
Special field: ___________________________
Definition: ___________________________

**Words and their meanings**

*Words are known by the company they keep.*

When you read in English perhaps you are used to trying to understand it word by word, or to translate word by word. What happens? Let’s see.

Match the English words in column A with their Spanish equivalents in column B.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand</td>
<td>abrigo</td>
</tr>
<tr>
<td>Side</td>
<td>Mano</td>
</tr>
<tr>
<td>Coat</td>
<td>Lado</td>
</tr>
</tbody>
</table>

Now translate the following expressions into Spanish:

- On the other hand
- Another coat of paint

You will see that ‘hand’ is not always ‘mano,’ nor ‘coat,’ ‘abrigo.’ Look at the above expressions used within a context.

- I hate living in this city but, **on the other hand**, it’s the only place where I can take this specialized course.

- I think the wall could use **another coat of paint**. The old color was a lot darker that the new one.

When can you translate ‘love’ by ‘cero’? ___________________________
When is a ‘ring’ a ‘cuadrilátero’? _____________________________

We cannot see words in isolation. Words form relationships with other words and these relationships determine the specific meanings of different contexts. We cannot understand a text by translating the individual words in isolation. Word by word translation involves danger. Words must be understood in their context.

**Exercise 19: One word, several meanings**

Below you will find two columns. Match the sentences in column A with the corresponding definition in column B. Make sure you take the context into account.

What does the word ‘drop’ mean in the following sentences?

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The helicopters <strong>dropped</strong> food and medicine.</td>
<td>a. A small round amount of liquid</td>
</tr>
<tr>
<td>2. The book <strong>dropped</strong> on the floor.</td>
<td>b. A decrease in strength or intensity</td>
</tr>
<tr>
<td>3. The big <strong>drop</strong> frightened him.</td>
<td>c. To allow something to fall</td>
</tr>
<tr>
<td>4. John has been <strong>dropped</strong> from the team.</td>
<td>d. A vertical distance down from a place</td>
</tr>
<tr>
<td>5. I felt a <strong>drop</strong> of water in my face.</td>
<td>e. To fall</td>
</tr>
<tr>
<td>6. There was a sudden <strong>drop</strong> in temperature.</td>
<td>f. To no longer include something or somebody in something</td>
</tr>
</tbody>
</table>

What does the word ‘heart’ mean in the following sentences?

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Rare plants can be found in the <strong>heart</strong> of the forest.</td>
<td>a. Complete interest or attention</td>
</tr>
<tr>
<td>2. She has a kind <strong>heart</strong>.</td>
<td>b. The center of a person’s feelings</td>
</tr>
<tr>
<td>3. I know you have got the queen of <strong>hearts</strong>!</td>
<td>c. The organ inside the chest that sends blood round the body</td>
</tr>
<tr>
<td>4. He is not working well because his <strong>heart</strong> is not in the job.</td>
<td>d. A symbol that is used to show love</td>
</tr>
<tr>
<td>5. He sent her a card with a big red <strong>heart</strong> on it.</td>
<td>e. The most central part of something</td>
</tr>
<tr>
<td>6. When you exercise your <strong>heart</strong> beats faster.</td>
<td>f. A playing card</td>
</tr>
</tbody>
</table>

1. ___ 2. ___ 3. ___ 4. ___ 5. ___ 6. ___
What does the word ‘home’ mean in the following sentences?

A
1. He began to run home from the second base.
2. Greece is said to be the home of democracy.
3. She left home at the age of 21.
4. They only win the home games.
5. These cars are made for the home market.
6. If he gets worse, we will have to put him in a home.

B
a. Playing at one’s own sports field
b. The place where something began
c. Connected with your own country
d. A place that provides care for people or animals
e. A place that a baseball player must try to reach
f. The place where you live with your family

1. ___  2. ___  3. ___  4. ___  5. ___  6. ___

What does the word ‘play’ mean in the following sentences?

A
1. I play baseball on Saturdays.
2. Shall I play the tape for you again?
3. It was a clever play that won the football game.
4. The play produced by the Drama Club was a success.
5. Mary will play the piano in the concert.
6. The children like to play in the afternoons.

B
a. To do something to enjoy yourself or to have fun
b. Move in one’s turn in a game
c. To make music with a musical instrument
d. To turn on a record, tape, etc. so that it produces sounds
e. A story that is written to be performed by actors in a theater
f. To take part in a sport, game, or match

1. ___  2. ___  3. ___  4. ___  5. ___  6. ___

What have you learnt about word meanings from these exercises?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Exercise 20: One word, two meanings

Like in the previous exercise, the words below have more than one meaning. In this exercise, you will see pairs of sentences with the same word missing. Read
the sentence and based on its context, choose the right word from the list to fill in the blank.

bank  service  
change  speaker  
course  star  
head  tank  
note  tap

1. a. We both had steak for the main _____________________.
   b. My English ____________________ lasts for three months.

2. a. That hat wouldn’t fit on his ________________.
   b. The ________________ of the company is visiting us tomorrow.

3. a. The singer had difficulty reaching the top _________________.
   b. She left him a ________________ saying she’d be late.

4. a. We always get good __________________ in this shop.
   b. She went to the evening ________________ at the church.

5. a. The guest ________________ at the conference gave a lecture on education.
   b. I need a new ________________ for my car CD player.

6. a. I heard a soft ________________ on the kitchen door.
   b. There isn’t any water coming from this ________________!

7. a. There were three men fishing from the river ________________.
   b. I took out a $5,000 loan at the ________________.

8. a. The army’s ________________ has a new gun.
   b. Fill up your ________________ before your trip.

Dictionaries play an important part in learning a new language but remember that it is just a tool. It may be one way to help you find the meaning of unknown words. However, as a reader you need to have a large vocabulary and one way of building your vocabulary is actively learning new words. How do we do that? Let’s see.
Understanding word form

One way to learn new words is to be aware of the way English words are formed. Many words are usually made up of three parts: a prefix, a stem and a suffix. You can use this knowledge to increase your vocabulary.

The stem is the central part of the word. It is also known as the root and it gives the base meaning of the word. We add prefixes and suffixes to the root to make new words.

Prefixes

A prefix comes at the beginning of a word. It adds more meaning to the stem. Here are some common prefixes, most of them similar to Spanish ones you already know.

<table>
<thead>
<tr>
<th>Prefix</th>
<th>Meaning</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>anti-</td>
<td>against</td>
<td>• There was an antinuclear march to City Hall to protest against recent nuclear testing.</td>
</tr>
<tr>
<td>co-</td>
<td>together</td>
<td>• Many different species coexist on our planet.</td>
</tr>
<tr>
<td>ex-</td>
<td>previously, formerly</td>
<td>• The ex–director of the company was found guilty of fraud.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Nicole Kidman is Tom Cruise’s ex–wife.</td>
</tr>
<tr>
<td>inter-</td>
<td>between</td>
<td>• Our national airline will resume international flights soon.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• You must take the inter-city train to go from Bonn to Berlin.</td>
</tr>
<tr>
<td>mini-</td>
<td>small</td>
<td>• When IBM released its minidisk a few years ago, it was an instant success.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The group will take the minibus to go downtown.</td>
</tr>
<tr>
<td>mono-</td>
<td>one</td>
<td>• I just bought a monolingual dictionary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The judge spoke in a monotonous voice.</td>
</tr>
<tr>
<td>multi-</td>
<td>many</td>
<td>• I am working for a multinational group.</td>
</tr>
<tr>
<td>post-</td>
<td>after</td>
<td>• I can’t cash the cheque today, it’s postdated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Many immigrants went to postwar Germany to help rebuild the country.</td>
</tr>
<tr>
<td>pre-</td>
<td>before</td>
<td>• Scientists are finding fossils which will help us understand prehistoric animal behaviour.</td>
</tr>
<tr>
<td>Prefix</td>
<td>Meaning</td>
<td>Example</td>
</tr>
<tr>
<td>--------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>pro-</td>
<td>in favor of</td>
<td>There was a pro-government meeting.</td>
</tr>
<tr>
<td>re-</td>
<td>again</td>
<td>I must rewrite this letter.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The spacecraft re-entered the earth’s atmosphere.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>He remarried after his divorce.</td>
</tr>
<tr>
<td>semi-</td>
<td>half</td>
<td>By the time they got to the hospital, the child was semi-conscious.</td>
</tr>
<tr>
<td>sub-</td>
<td>under, less</td>
<td>The researchers worked in subzero temperature during their stay at the Arctic centre.</td>
</tr>
<tr>
<td>super-</td>
<td>over, more</td>
<td>Superhuman efforts were made to free the trapped mine workers.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>The new supersonic jet will soon begin international flights.</td>
</tr>
<tr>
<td>trans-</td>
<td>across</td>
<td>Charles Lindburg was the first to make the first transatlantic flight.</td>
</tr>
<tr>
<td>mis-</td>
<td>badly, wrongly</td>
<td>A misunderstanding caused a rift between the two friends.</td>
</tr>
<tr>
<td>out-</td>
<td>more, better</td>
<td>The gang members were outnumbered by the police.</td>
</tr>
<tr>
<td>over-</td>
<td>too much</td>
<td>If you eat too much, you will soon become overweight.</td>
</tr>
<tr>
<td>under-</td>
<td>too little</td>
<td>This meat is undercooked. Please take it back.</td>
</tr>
</tbody>
</table>

There are some **negative prefixes** used to express an opposite of the idea expressed by the stem.

- **un:** unhappy, unfair, unofficial, unplug, unemployed
- **in:** inexact, independent, indirect, inexpert
  - Note: We do not use *in* before *l, m, p, or r*. We use *il, im, or ir* instead: *illegal, illogical, immobile, immortal, impossible, impatient, irrelevant, irresponsible*.
- **dis:** dishonest, disunited, disagree, disappear, dislike, disadvantage
- **non:** nonalcoholic, nonstop, nonsmoker
- **de:** defrost, decentralization

How do we know which negative prefix to use with a root? We learn each root word with its appropriate negative form. There is no particular reason we say ‘unhappy’ instead of ‘inhappy.’ At least not a reason that is relevant to discuss in this course.

Another particularly useful prefix is *en*, which turns the root word into a verb:

- *en + danger* = endanger (to put in danger)
- *en + large* = enlarge (to make larger)
- *en + able* = enable (to make capable)
Suffixes

A suffix comes at the end of a word. For example, we can add the suffix -ment to the verb state to form the noun statement. Not all combinations are possible. We can say statement, amusement, punishment, but we cannot add -ment to every verb. There is sometimes a change in the stem: possible—possibility.

### Abstract nouns

**Verb** + *ment*  
- payment, movement, development
- correction, discussion
- production
- information, invitation
- addition, repetition. Note: Verbs with *d/t* change to *sion*  
  - decide—decision, permit—permission
- performance, acceptance
- existence, preference
- building, feelings

**Adjective** + *ty*  
- certainty, royalty
- stupidity, nationality, security
- happiness, illness, blindness

**Adj in ent → ence**  
- silent—silence, absent—absence

**in ant → ance**  
- distant—distance, important—importance

### Nouns for people

**Verb** + *er/or*  
- walker, owner, driver, doctor, editor

**Verb** + *ant/ent*  
- applicant, assistant, student

**Noun/verb/adj + *ist***  
- journalist, nationalist, tourist

**Noun + *an/i an***  
- republican, musician, Brazilian

**Noun + *ess***  
- waitress, princess, actress

### Verbs

**Adjective** + *ize***  
- modernize, popularize, centralize

**+ en***  
- shorten, harden, brighten, widen

### Adjectives

**Noun**  + *al***  
- national, industrial, cultural, original

**+ ic***  
- heroic, artistic, energetic

**+ ful***  
- careful, hopeful, peaceful, beautiful

Note: These adjectives end with a single *l* but the adverb has two, e.g., *carefully*

**+ less***  
- careless, hopeless, powerless

**+ ous***  
- dangerous, famous

**+ y***  
- healthy, thirsty, wealthy

**+ ly***  
- friendly, monthly

**Verb/noun + *ive***  
- active, effective, expensive

The following are common endings for nouns. If you see these endings on a word, then you know it must be a noun.

**-dom**  
- state or condition
domain, position, rank
a group with position, office, or rank
- kingdom: king+dom means the domain or area belonging to a king
- wisdom: wise+dom means the state of understanding what is good, right and lasting

-ity
  condition or quality of
  - capability: capable+ity means the condition of being capable
  - flexibility: flexible+ity means the quality of being flexible

-ment
  act of; state of; result of
  - contentment: content+ment means the state of being satisfied (content)

-tion, -sion
  act of; state of
  - celebration: celebrate+tion means the act of celebrating

-ness
  State of
  - toughness: tough+ness means the state of being tough

-ance, -ence
  act of; state of; quality of
  - assistance: assist+ance means the act of giving help

-er, -or
  one who; that which
  - fighter: fight+er means one who fights
  - actor: act+or means one who acts

-ist
  one who; that which
  - violinist: violin+ist means one who plays the violin

-th
  Turns the root word into an abstract noun
  - growth: grow + th means the act of growing
  - truth: true + th means that which is true

Exercise 21: Choosing the right prefix and suffix

Part A. In the same way that we cannot make the negative of the Spanish word ‘posible’ by adding the prefix ‘des’ to say ‘desposible’ in Spanish when we mean ‘imposible,’ English requires certain words to be learned by heart. Complete the sentences by putting the proper negative prefix in the blanks. The prefixes are: un-, non-, in-, dis-, and mis-.

1. You agree with them, but I _____agree.
2. The surface was not even; it was _____even.
3. The results were not conclusive; they were _____conclusive.
4. He was qualified once, but they _____qualified him.
5. It is sometimes and advantage to live in a city, and sometimes a _____advantage.
6. Please pay attention if you want to understand my explanation. I do not want any _____understanding.

Part B. Read the sentences below, and then complete them by adding the correct suffix to the words in SMALL CAPS.

1. The art gallery is one of the city’s main visitor ________________.  
   ATTRACT

2. Being a teacher can be a very ________________ job at times.  
   STRESS

3. We may never know the ________________ about what happened.  
   TRUE

4. Someone who belongs to a country that is not your own is a _________________.  
   FOREIGN

5. All the major ________________ parties support the idea.  
   POLITICS

6. There’s been enormous ________________ in the area of e-commerce.  
   GROW

Part C. Complete the texts below with the appropriate form of the word in the margin. To get the appropriate form, combine each word with one of the word parts from the list in the box. The first one has been done for you.

<table>
<thead>
<tr>
<th>Word Part</th>
<th>-less</th>
<th>-ify</th>
<th>-able</th>
<th>-ed</th>
<th>under-</th>
<th>im-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>anti-</td>
<td>pre-</td>
<td>over-</td>
<td>un-</td>
<td>sub-</td>
<td>er</td>
</tr>
<tr>
<td></td>
<td>en-</td>
<td>re-</td>
<td>-ing</td>
<td>-ist</td>
<td>mis-</td>
<td>-en</td>
</tr>
</tbody>
</table>

1. design  
The university authorities were not pleased with the design for the new wing of the library. So the architect was asked to redesign it.

2. use  
The new machine was frequently ________________ because no one in the office had been trained to use it.

3. category  
‘Butterflies’ is not a major category. It is only a ________________ under the major division ‘Insects.’

4. beauty  
One of the latest discoveries in industrial psychology is that pleasant surroundings increase the output of workers. That is why several businessmen are now trying to ________________ the places in which their employees work.

5. home  
After a major flood, many people are left ________________ and the government has to find new places for them to live in.

6. neurology  
There are very few ________________ in this country. This is because neurology is a difficult subject and few people are interested enough to study it.

7. transfer  
Certain kinds of knowledge can be easily communicated from one person to another. Other kinds of knowledge, however,
are not easily ______________. A person can communicate factual information easily but it is difficult to tell someone what a potato tastes like or what the petals of a rose feel like.

8. dream

Often the contents of a dream appear to have no connection at all with the immediate thoughts and interests of the __________. A person who has had a very pleasant day could easily go to sleep and have a horrible nightmare.

Now, let’s review what you’ve learnt. Select the correct option for the statements below.

1. The main part of a word is called the root. The root (also known as the stem) is the ___ to which other parts are added.
   A. sentence  B. part  C. judgment

2. Sometimes word parts are added to the end of a word. These parts are called ___.
   A. prefixes  B. suffixes  C. roots

3. Suffixes have meanings of their own. When they are placed at the end of the ___, they influence the meaning of the word.
   A. phrase  B. sentence  C. root

4. The letter or group of letters after the root of a word is the ___.
   A. root  B. prefix  C. suffix

5. From the words below, the one with a suffix is ___.
   A. fright  B. rain  C. truthful

6. From the words below, the one with a suffix is ___.
   A. rude  B. speed  C. toothless

7. From the words below, the one without a suffix is ___.
   A. neatness  B. nervously  C. through

8. How many of these words have a suffix?
   manhood  blindness  child
   A. one  B. two  C. three

9. How many of these words have a suffix?
   faster  washable  enjoyment
   A. one  B. two  C. three
Becoming aware of cognate words

What are cognates?

Cognates are words that are the same or have similar meanings in two or more languages. This often happens when words are historically derived from the same root, or when one language “adopts” a word from another. When many cognates exist, they certainly help to make language learning easier.

Here are some examples of words that mean the same and are spelled identically in both English and Spanish. There are also cognates that are spelled nearly the same in both languages.

<table>
<thead>
<tr>
<th>English</th>
<th>Spanish</th>
</tr>
</thead>
<tbody>
<tr>
<td>actor</td>
<td>actor</td>
</tr>
<tr>
<td>cable</td>
<td>cable</td>
</tr>
<tr>
<td>fatal</td>
<td>fatal</td>
</tr>
<tr>
<td>general</td>
<td>general</td>
</tr>
<tr>
<td>hotel</td>
<td>hotel</td>
</tr>
<tr>
<td>local</td>
<td>local</td>
</tr>
<tr>
<td>material</td>
<td>material</td>
</tr>
<tr>
<td>normal</td>
<td>normal</td>
</tr>
<tr>
<td>real</td>
<td>real</td>
</tr>
<tr>
<td>simple</td>
<td>simple</td>
</tr>
<tr>
<td>total</td>
<td>total</td>
</tr>
</tbody>
</table>

However you have to WATCH OUT because there are also a few FALSE cognates around. These are similar to false friends: they appear to be what they are not, and this can get you into trouble! Next there is a list of some common English–Spanish false friends.

<table>
<thead>
<tr>
<th>English</th>
<th>Spanish equivalent</th>
<th>Incorrect translation of incorrect translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>actually</td>
<td>de hecho, en realidad</td>
<td>current, nowadays</td>
</tr>
<tr>
<td>application</td>
<td>Solicitud</td>
<td>effort, computer application</td>
</tr>
<tr>
<td>appreciate</td>
<td>Agradecer</td>
<td>to esteem</td>
</tr>
<tr>
<td>assist</td>
<td>ayudar, atender</td>
<td>attend</td>
</tr>
<tr>
<td>attend</td>
<td>asistir (a un evento, etc.)</td>
<td>assist</td>
</tr>
<tr>
<td>carpet</td>
<td>Alfombra</td>
<td>folder</td>
</tr>
<tr>
<td>embarrass</td>
<td>avergonzar, apenar</td>
<td>pregnant</td>
</tr>
<tr>
<td>library</td>
<td>Biblioteca</td>
<td>bookstore</td>
</tr>
<tr>
<td>realize</td>
<td>darse cuenta</td>
<td>to carry out</td>
</tr>
<tr>
<td>sensible</td>
<td>Sensato</td>
<td>sensible</td>
</tr>
<tr>
<td>sensitive</td>
<td>Sensible</td>
<td>sensitive event</td>
</tr>
<tr>
<td>success</td>
<td>Éxito</td>
<td></td>
</tr>
</tbody>
</table>
Exercise 22: Identifying cognates

Part A. Read the following text and pay particular attention to the cognates.

“...Many people feel offended when their minds are linked to computer programs or machines. We have seen how a simple tower building skill can be composed of smaller parts. But could anything like a real mind be made of stuff so trivial? «Ridiculous», most people say. «I certainly do not feel like a machine! »

Marvin Minsky

How many cognates were you able to identify? In the table below write at least 4. Then, translate the words into Spanish.

<table>
<thead>
<tr>
<th>English cognate</th>
<th>Spanish equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
</tbody>
</table>

Part B. Read the text that follows and underline all cognate words.

Several theories have been proposed about why the dinosaurs disappeared from the face of the earth. In recent years one popular theory proposes that climatic changes caused the dinosaurs to become extinct. This climatic change theory says that millions of years ago the climate of the world gradually became colder. As the earth slowly became colder, fewer plants were able to grow. The cold weather finally resulted in a severe shortage of food for the dinosaurs.

How many cognates were you able to identify? __________

In the space below write 4 of them in alphabetic order. Then translate the words into Spanish.

<table>
<thead>
<tr>
<th>English cognate</th>
<th>Spanish equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
</tbody>
</table>
Did you find any false friend in the above passage? _________. If your answer is YES, write down the word or words you found.

_________________  ___________________  ___________________  ___________________

What are the advantages and / or disadvantages of dealing with cognates when reading in a foreign language? Have you ever had any “funny” or unusual experience related with cognates or false cognates? Discuss your experience with your classmates and your teacher.

**Exercise 23:  False friends**

The words in the parentheses are known as false friends because they seem to be similar to words in Spanish. Use your dictionary to find the meaning of each of the words. Then fill in the gaps with the correct word.

1. Did you know that Chrissie got ________________ (embarrassed / pregnant) on holiday in Ibiza?
2. The ________________ (signature / subject) I hate most is maths.
3. Begonia is a very ________________ (kind / sympathetic) person.
4. Keep ________________ (removing / stirring) the soup the whole time.
5. I couldn’t agree more. That’s a very ________________ (sensible / sensitive) idea.
6. The film The Quiet American was a box-office ________________ (exit / success).
7. How many ________________ (idioms / languages) can you speak?
8. ________________ (Actually / Nowadays) I’m living with my parents again.
10. The police came to my ________________ (assistance / attendance).
11. I’ve got ________________ (a cold / constipation). Pass me a tissue, please.
12. I was only living with my parents ________________ (eventually / temporarily).
13. The government have ________________ (inverted / invested) a lot of money in the new scheme.
14  Do not ________________ (invert / invest) this package.

15  He never stops moving some part of his body. He finds it impossible to ________________ (keep quiet / keep still).

16  We didn’t enjoy the wedding ________________ (absolutely / at all).

17  All my immediate family live in England but I have a lot of ________________ (parents / relatives) in Canada.

18  My ________________ is from 8 am to 5 pm but it only takes me twenty minutes to get to the office. (journey / working day)

Steps to effective vocabulary learning

In the Appendix, “¡No entiendo lo que leo en inglés!”, you will find information about vocabulary, its importance and ways to learn new words quickly. The appendix also includes a vocabulary list containing the most common Spanish translation for frequent English words. The list is divided into three parts:

words that are found among the most common 1,000 words;

words that are found among the most common 2,000 words; and

words that are found in the academic word list.

Why should you learn these words? Researchers have found that readers need to have a basic vocabulary of at least 3,000 words to be able to read effectively in English. Besides, the more words you know, the better you will be able to guess the meaning of unknown words. More than 60 percent of the words you will find in the texts in your reading guide fall into the 1,000 word category. So it’s worth the while learning them. Please read the information in the Appendix section and practice the basic vocabulary learning technique “El computador manual de Leitner” explained there. Once you’ve learnt the common meaning of these words, or if you already know them, use the tips given here and see how much your vocabulary can increase in this year!

Step 1: Find out the most common meaning

Use a good bilingual dictionary to find the most common meaning of the word.

Live with (v+p+o) = share house with

as in

He is easy to live with = Es fácil vivir con él
Live with = accept or tolerate a situation
as in
Men who live with danger = Hombres que se enfrentan al peligro

Step 2: Once you know the most common meaning of the word, make a word card

If you use an index card, write the word in English in one colour on one side, and the Spanish equivalent in another colour on the other. If you can:

1. Find an image which represents the word. Use it!

2. Associate the word with an action, do it!

3. Pronounce the word, say it!

4. See it in your mind’s eye, visualize it, its shape, written form, the sound it makes!

5. Link the word to your personal feelings, experiences, things you already know.

6. Write the words several times, say it out aloud, do the actions, think of the image.

Step 3: See how native speakers use words

Your monolingual dictionary can give you different meanings of the word. See how the sentences illustrate the meaning.

learn 1. To gain knowledge of, or skill in, by study, practice or being taught: My sister learnt to drive last year 2. To find out: We just learnt about his death.

Now you use it. Personalize the word in a sentence of your own!!! The more you use the word and relate it to things in your own life, the easier you will learn it.
Remember to add the new meanings and uses to your vocabulary card, file or notebook. Highlight differences and similarities, use coloured pens, underline the word, use it to connect ideas, write notes!!

**Step 4: Play with words**

Use mnemonic techniques. Link new words to old; to familiar sounds.

Make semantic maps

Learn the synonyms (pal / friend) and antonyms (happy / sad)

Use them in sentences:

A. compare & contrast meaning;
B. write definitions

Classify words and indicate the criteria: happy, angry, sad (feelings)

Learn phrases together in groups:

- **ring the bell**
- **walk the dog**
- **cross the street**

Look closely at false cognates. Use them in sentences in **situations** which clearly show the difference in their meaning.

éxito = success

*After the movie we leave through the exit.*

*Miguel Bosé’s tour was a success.*

Use your individual learning styles… maximize your strength.

A. If you are visual person, make use of images and colours
B. If you are auditive, repeat the word several times, find words that rhyme, look for the word in songs . . . sing it
C. If you are kinesthetic, do actions, dance, jump, run, write the word
Always review the new words: once a day, once a week, once a fortnight... Review the old words along with the new.

Most importantly... use the word... link it to you personally, your world, your experiences... but USE IT!!!
Focus on compound nouns

The English language makes frequent use of expressions in which a combination of many ideas is condensed into a few words. These combinations produce a structure that is extremely compact where a main noun or HEAD NOUN is preceded by one or more words that give us more information about the head noun, as in “a heat control device,” which is a device that controls heat.

We can solve possible problems of confusion or ambiguity by analyzing the order of the words. The last word in the compound noun phrase says what the thing is, while the words that precede describe it. Let’s look at some examples:

In computer science we talk about an address bus which is a bus dedicated to address information while the memory capacity of a computer is the capacity of its memory.

We talk about food production when we refer to the production of food and earthquake wave theories tell us about the theories concerning the waves of earthquakes.

We can express a number of possible meanings through compound nouns. For example, the first noun can give us information about the second noun, what it is made of, its use or what it is part of. Let’s look at the following:

1. **Material**: the first noun tells us what the second is made of.
   Example: *a silicon chip* = a chip made of silicon

2. **Function**: the first noun tells us what the second noun is used for.
   Example: *a smoke alarm* = an alarm which warns of smoke

3. **Part**: the second noun refers to a part of the first.
   Example: *a program feature* = a feature of a program
4. **Activity of person**: the second noun refers to an activity or person related to the first.
   Example: *aircraft engineer* = an engineer specialized in aircraft

**Multiple nouns**: sometimes a compound noun will join together several other nouns to form an expression that is three, four or even five words long.
Example: *disease control methods* = methods for the control of diseases

Look at these examples of this type of compound noun:

- *a signal generator* = equipment for generating signals
- *a cassette player* = equipment for playing cassettes
- *a battery tester* = equipment for testing batteries

So what do we call equipment for . . .

. . . playing CDs? __________________________________________
. . . receiving radio (signals) ____________________________
. . . synthesizing speech? _______________________________
. . . sensing vibration? ________________________________

Notice that those nouns describing the nucleus or head noun are usually singular.

**Exercise 24: Identifying the head noun**

Select the option that corresponds to the concept given.

1. Weather condition studies are a ___.
   A. type of studies
   B. certain kind of weather
   C. variety of study conditions

2. An air cushion vehicle is ___.
   A. some special kind of cushion
   B. a vehicle that rests on a cushion of air
   C. a cushion used for air vehicles

3. Biology specimen collections are a ___.
   A. type of specimen
   B. type of collection
   C. branch of biology
   D. branch of science
4. Chicken cell embryos are ___.
   A. chickens that have cells in their embryos
   B. embryos that come from chicken cells
   C. cells that come from chicken embryos

5. A radio wave emitting body would be a ___.
   A. body that emits radio waves
   B. radio wave that emits bodies
   C. body that is emitted by a radio wave

6. My desktop publishing program is ___.
   A. a computer program to create publications right from the top of my desk
   B. the publication about programming that I have on the top of my desk
   C. one of many programs that I have published from the top of my desk

Exercise 25: Understanding the form of compound nouns

Express the following phrases more concisely by using appropriate compound nouns.

1. The analysis of vectors ______________________________
2. The distribution of population ______________________________
3. A textbook about the analysis of vectors ______________________________
4. An indicator for the speed of air ______________________________
5. Failure of the crops ______________________________
6. Industry of the refining of oil ______________________________
7. Production of machinery for the farm ______________________________
8. Prices of the products of farms ______________________________
9. Methods of production ______________________________
10. Mechanics of fluids ______________________________
11. The production of machinery ______________________________
12. Interpretation of photographs ______________________________
13. Measurements of the transfer of heat
14. Techniques for the breeding of plants
15. Chemistry of the nucleus of cells
16. Steel which contains carbon

Did you notice how you worked “from back to front” in order to form your compound nouns?

**Exercise 26: Understanding the meaning of compound nouns**

**Part A.** Explain the meaning of the following compound nouns in your own words.

1. burglar alarm
2. germanium diode
3. assembly line
4. cellphone
5. wavemeter
6. nobleman
7. pipeline
8. wallpaper
9. toothbrush
10. starlight
11. goatskin
12. riverbank
13. wavelength
14. fishbone

**Part B.** Explain the difference between the following concepts.
communication satellite ________________________________
satellite communication ________________________________
a car battery __________________________________________
a battery car __________________________________________
the glass bottle _________________________________________
the bottle glass _________________________________________
a gas turbine __________________________________________
a turbine gas __________________________________________
an assault rifle _________________________________________
a rifle assault _________________________________________
my tea plantation ________________________________________
the plantation tea _________________________________________
light indicators _________________________________________
the indicator light _________________________________________
drainage system reconstruction ____________________________
system reconstruction drainage ____________________________
drainage reconstruction system ____________________________
water treatment plant ______________________________________
plant treatment water ______________________________________
water-plant treatment ______________________________________

Exercise 27:  Making and using compound nouns

**Part A.** See how many compound nouns you can make by using the words on lists A and B.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Your words</th>
<th>Your words</th>
</tr>
</thead>
<tbody>
<tr>
<td>cancer</td>
<td>pump</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mercury</td>
<td>fatigue</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
air research
vacuum level
metal bottom
sea pressure

Part B. Join one word from column A and one from column B to make compound nouns. Then, complete the sentences with one of the compound nouns formed.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>Your words</th>
</tr>
</thead>
<tbody>
<tr>
<td>screen</td>
<td>case</td>
<td>_______________</td>
</tr>
<tr>
<td>earth</td>
<td>moon</td>
<td>_______________</td>
</tr>
<tr>
<td>eye</td>
<td>shield</td>
<td>_______________</td>
</tr>
<tr>
<td>brief</td>
<td>quake</td>
<td>_______________</td>
</tr>
<tr>
<td>honey</td>
<td>set</td>
<td>_______________</td>
</tr>
<tr>
<td>sun</td>
<td>sight</td>
<td>_______________</td>
</tr>
</tbody>
</table>

1. The rock shattered the _______________ of her car.
2. After the wedding we went to Australia for our _______________.
3. Since his _______________ is failing he has to wear glasses.
4. The _______________ caused many buildings to collapse.

As we have seen, compound nouns are used in scientific English because they are concise: the compound noun is shorter than writing out the entire phrase. Phrases can be turned into compound nouns and vice versa. When two or more nouns are put together to form a compound, the first nouns act as adjectives for the last one. When this occurs, adjectival nouns usually do not take their plural form. Sometimes only the context helps you to understand whether the concept behind the compound noun is singular or plural:

After the hurricane, the city had to get ready for very strict disease control. (= control of diseases in general)

In the case of AIDS, we have not yet reached a stage of total disease control. (= control of the disease called AIDS)
**Exercise 28: Interpreting –ing and –ed in compound nouns**

Look at the following compound nouns and pay attention to their meaning:

- *animal-trapping fungi* = fungi that trap animals
- *animal-trapped fungi* = fungi that are trapped by animals

As you know, –*ing* and –*ed* indicate the gerund and the past (or, as in this case, the past participle) of verbs. When a compound noun includes words with these endings, be careful to interpret them correctly. In the above examples you can see that when the verb in the compound has an –*ing*, the noun following it performs the action of the verb. On the other hand, when it has an –*ed*, the noun following it is the object of the verb’s action. Notice this is interpreted in the same way we would regular adjectives as in the examples below:

- *a boring movie* = a movie that bores the audience
- *a bored spectator* = a spectator that is bored by a show
- *an interesting book* = a book that interests readers
- *an interested reader* = a person who is interested in a reading

**Part A.** Explain the difference between the following concepts.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>fungus-caused disease</td>
<td>_____________________________</td>
</tr>
<tr>
<td>fungus-causing disease</td>
<td>_____________________________</td>
</tr>
<tr>
<td>oil-propelled engine</td>
<td>_____________________________</td>
</tr>
<tr>
<td>oil propelling engine</td>
<td>_____________________________</td>
</tr>
<tr>
<td>methane-powered engine</td>
<td>_____________________________</td>
</tr>
<tr>
<td>engine-powering methane</td>
<td>_____________________________</td>
</tr>
<tr>
<td>ant-eating mammal</td>
<td>_____________________________</td>
</tr>
<tr>
<td>ant-eaten mammal</td>
<td>_____________________________</td>
</tr>
<tr>
<td>mammal-eating ants</td>
<td>_____________________________</td>
</tr>
<tr>
<td>boa-feeding services</td>
<td>_____________________________</td>
</tr>
<tr>
<td>rodent-fed boa</td>
<td>_____________________________</td>
</tr>
</tbody>
</table>

Did you notice how irregular verbs (such as ‘eat’) do not take –*ed* for their past participle? Also please note that hyphens (-) may not always be used.
**Part B.** Explain the meaning of the following compound nouns in your own words.

<table>
<thead>
<tr>
<th></th>
<th>Compound Noun</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>light-emitting diode</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>salt-bearing strata</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>reef-building organism</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>banana-splitting system</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>man-eating animal</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>roach-infested attic</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>lid-covered container</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>horse-plowed field</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>orange-squeezing machine</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>surface venting valve</td>
<td></td>
</tr>
</tbody>
</table>
Sometimes, the dictionary may not be necessary. Usually, we can guess the meaning of a word from its context. In fact, if we can avoid using the dictionary it will be better. Why?

When we read we have limited time. Finding the meaning of every word in the dictionary takes a lot of time.

If we depend too much on the dictionary, we can lose the sense of the whole text. If we concentrate on individual words we lose focus.

When we do not know the meaning of a word, it is a good reading strategy to try to guess its meaning from the context in which it appears.

We can also use our own background knowledge about a specific topic to help us guess the meaning of unknown words.

In this section we will look at the different strategies we can use to guess meaning from context and so avoid overusing the dictionary.

In order to be an effective reader, you should have a very good knowledge of vocabulary. The more words you know and can recognize, the easier it will be for you to understand the text. This does not mean, however, that you will understand all the words you see. What do you usually do when you come to a word you do not know when you are reading? Do you:

A. look it up in a bilingual dictionary?
B. ask your teacher?
C. ask another person, a friend or your parents?
D. try to guess what it means?
If you answered A, B, or C, then you are not reading as effectively and efficiently as you could be. The best strategy for dealing with an unknown word is to try to guess what it means. This strategy is useful because:

- it is fast as you don’t have to interrupt your reading and you can enjoy the text because you don’t have to stop so often;
- it helps your concentration because you stay focused on the general sense of what you are reading; and
- it helps build vocabulary because you probably remember the words.

In this chapter you will find some strategies that you can use to understand the unknown words you might meet while reading. Some of them are:

- context clues
- synonyms and antonyms
- morphological clues
- definitions, restatements, examples and explanations

**Using context clues**

Because you can never know all the English words you will find in your textbooks, it is very important that you be able to make good guesses about their meanings. Examining the context of the word —i.e., the words and phrases that come before and after it— is one way to make a logical guess about what the word means. Even a very small context can sometimes be helpful. We may not know exactly which word will be used, but we know which concepts tend to appear in the same context. For example, in a text on agriculture we would expect to find words like *crops, soils, fertilizers, climate*, and so on. We would not expect to find terms taken from areas such as Criminology or History of Art. In the same way, we expect the verb *achieve* to be followed by words with a positive connotation such as *success, aspiration, and aim*.

Look at the example below:

Do you know what ‘misogynist’ means? If not, try to guess.

A **misogynist** is a _________________________________.

Read the sentences below. See if you can get the meaning from the general idea.

A. She realized that her boss was a **misogynist** soon after she started working for him.
B. It is difficult for a woman to work for a misogynist. She is never sure of the reason for his criticism.

C. She knew that no woman would ever get a top-level job in a company owned by a misogynist.

Now, let us see what we know about a misogynist from the context. First of all, he is a man (A) who criticizes women's work (B) and has negative feelings about women (C). So we can probably say that a misogynist is a man who does not like women.

The following exercises will help you develop the skill of guessing the meaning of vocabulary from the context in which it is used. Remember, don’t use your dictionary!

**Exercise 29: Identifying context clues**

Identify the meaning of the italicized word. Then write the word(s) in the sentence which worked as clues to help you.

1. The rock singer was very popular. A crowd was waiting at the park to listen to her songs.
   ‘Crowd’ means □ a lot of people.
   □ few

   The word(s) which helped me were: ____________________________

2. There are many ships near our city, so there is a lot of tar in the water.
   When there is tar in the water, the water is □ dirty.
   □ clean.

   The word(s) which helped me were: ____________________________

3. I helped my friend in math. He was very grateful. He thanked me again and again.
   A grateful person is □ appreciative of someone’s favor.
   □ indifferent to

   The word(s) which helped me were: ____________________________

4. He ate large amounts of food, so he got very fat.
   ‘Large amounts of food’ is □ a little food.
   □ a lot of

   The word(s) which helped me were: ____________________________

5. I didn’t expect a present from Danny, so I was surprised when he gave me a radio!
   ‘To expect’ means to think something □ is going to happen.
   □ isn’t

   The word(s) which helped me were: ____________________________
6. They bothered me all the time. They had no consideration for my privacy or my need to rest.

‘To have consideration’ means □ not to care about other people’s feelings.
□ to care

The word(s) which helped me were: _________________________________

7. “Excuse me,” said the girl, “I thought you were someone else.” She was very embarrassed.

When you are embarrassed you are □ proud.
□ uncomfortable.
□ satisfied.

The word(s) which helped me were: _________________________________

Exercise 30: Using context clues to infer meaning

Use the two sentences given after the question to help you guess the meaning of the word. These words are more difficult, but remember, don’t use your dictionary.

1. What does ‘ravenous’ mean? _________________________________

A. Could I have a piece of bread? I missed breakfast and I’m simply ravenous.

B. The poor horse was ravenous and it ate the leaves and bark off the trees.

2. What does ‘dike’ mean? _________________________________

A. After so much rain, the river flowed over the dike and into the fields.

B. People in this area began building dikes many centuries ago. It was the only way to keep the sea out of their village.

3. What does ‘pitch’ mean? _________________________________

A. The singer was so terribly off pitch that it hurt my ears to listen.

B. The ambulance siren was at such a high pitch that we all jumped.

4. What does ‘mold’ mean? _________________________________

A. The liquid plastic was poured into a mold and left there until it was hard.

B. The dentist first makes a mold of his patient’s teeth. From that he makes a model of the teeth to decide how to correct any problem.

5. What does ‘squall’ mean? _________________________________

A. The *squall* arrived so suddenly that we all got wet when we ran home from the beach.

B. When they saw the *squall* coming, the sailors took down the sail and headed for the port.

6. What does ‘gush’ mean? __________________________________________

A. When the fountain was turned on, the water *gushed* up several feet into the air.

B. The blood *gushed* out of his wound until the doctor put on a tight bandage.

7. What does ‘soggy’ mean? __________________________________________

A. The study window had been left open during the storm, and my papers were a *soggy* mess.

B. We gathered up the *soggy* towels and bathing suits and hung them all in the sun to dry.

8. What does ‘rugged’ mean? __________________________________________

A. Susan and her husband led a *rugged* life in the Alaskan mountains, with no electricity and no running water.

B. The young man’s face was *rugged*, but his smile was friendly and the children soon forgot their fears.

9. What does ‘stoop’ mean? __________________________________________

A. The old man walked slowly along, all *stooped* over and leaning on a stick.

B. When I *stooped* down to get a better look, I realized that it was a dead rabbit. It must have been hit by a car.

10. What does ‘wink’ mean? __________________________________________

A. George *winked* at me from across the room. It was a signal not to say anything about what we had seen.

B. I’ve only known one cat that could *wink* and that was Tinker. She really could close just one of her eyes and she did it often.


**Using synonyms and antonyms**

Writers can make their writing more interesting and enjoyable by using a variety of words to refer to the same thing. Look at the example below.
An orange can be a delicious snack. This citrus fruit is also very healthy for you because it is a good source of vitamin C.

Both ‘orange’ and ‘citrus fruit’ refer to the same thing.

Now let us do the following exercise. **Underline** the synonym for the *italicized* word. Sometimes the synonym will be more than a single word.

1. During its history, *Estonia* was occupied and ruled by forces from Germany, Sweden and other countries. Nevertheless, this small eastern-European nation still boasts a rich cultural heritage.

2. A favourite activity of Estonians is *singing in groups*. They are very fond of giving choral concerts.

3. Tartu, a smaller city to the southeast of Tallinn, is the home of Estonia’s oldest and largest *educational institution*. Tartu University is the only university in the world where Estonian is the language of instruction.

4. Both Tallinn and Tartu were originally built to be *fortresses*. The two strongholds were built on hills with good views of the surrounding countryside.

5. A controversial *organization* was recently recognized by the government. Now the Society of Estonian Nudists can meet legally in their club—without clothes.

**Exercise 31: Synonyms**

From the list below, choose a synonym for the italicized word in each sentence. Write it on the line provided.

- on the average
- battle
- complicated
- hardly
- omit
- customer
- extremely angry
- lack
- useful
- move forward

1. The Russian *consumer* has a particularly difficult time shopping in the Soviet Union. __________

2. The main reason seems to be the *shortage* of merchandise. __________

3. *Typically*, a person in the Soviet Union spends two hours a day standing in shopping lines. __________

4. Some of the lines *advance* very quickly. __________

5. Others seem to *barely* move at all. __________

6. Shopping has always been a *struggle* in the Soviet Union. __________
You can also build your vocabulary by asking yourself if you know the antonym or opposite of one of the most important words in a sentence. Knowing antonyms also helps you to learn words in a complete sentence. According to some researchers, this makes them easier to remember.

You will notice as well that some words have several opposites depending on the context. For example, the opposite of ‘old’ could be ‘new’ or ‘young’ depending on the situation, as in the sentences below:

1. Pedro is very lucky; his English teacher is young and beautiful. I’m unlucky; my teacher is old and ugly.
2. Mary and Paul have just moved from an old house to a new flat.

Can you think of any more examples like this? Write them in the space below. Compare them with your classmates.

__________________________________________________________________________

Asking yourself questions about your own English—what you know, and what you don’t know—will help you to improve more quickly.

**Exercise 32: Antonyms**

Complete each sentence with the opposite of the italicized word. Choose from the following list. Use each word once only.

- cry
- sharp
- light

- increase
- reject
- present

- hate
- shallow
- receive

- borrow
- tight
- set

1. The student you mentioned is __________ today, but Mary is absent.

2. He separated the __________ knives from the blunt ones.

3. The water is pretty __________ around here. But be careful around the other end of the pool where it is deep.

4. If you have a heavy meal before exercising, you’ll feel ill. Please, have something __________ before going to the gym.

5. Are you sure your belt isn’t too __________? I really think it should be loose to allow blood circulation.
6. Do you think he’ll __________ your offer? I would accept it immediately if I were in his place.

7. He really didn’t want to __________ so much money, although I had no problem in lending it to him.

8. Although sales have decreased this year, I think they will __________ in the next.

9. They were laughing about the new regulation, but they all began to __________ when they realized it would affect them too.

10. I love classical music. Why do you __________ it so much?

11. We hope to __________ the letter tomorrow. Benny said he’d sent it today.

12. The sun rises in the east and __________ in the west.

Using morphological clues

You may be able to determine the meaning of an unknown word by analyzing it. This means breaking the word into its parts and using the meaning of each part to give you clues to determine the meaning of the whole word. You can use the information you learned in the previous chapter about “Understanding word form,” where you learned about prefixes and suffixes, to help you analyze words. Read the following example:

The terminology of the field has been enriched by scientists of various points of view.

In this example, you can guess that the word ‘enriched’:

is a verb in the past participle because it has the suffix ‘-ed’
is related with the notion ‘rich,’ which is this word’s root, and
implies the idea of ‘transforming into’ because of the prefix ‘en–’

Therefore, you may guess that the above sentence means something like:

The terminology of the field has been made richer (= increased) by scientists of various points of view.
Using definitions, restatements, examples, and explanations

Sometimes we can guess the meaning of the word through an explicit definition given in the context. The unknown word is followed or preceded by other words which describe it. Look at this example:

A skyscraper, which is a tall building, dominates its surrounding.

The words following the unknown word, “a tall building,” tell us what a skyscraper is.

Read the following sentences and underline the word that is being defined and double underline its definition in the context. The first sentence is done for you.

1. Camouflage, or protective colouring, helps the animal hide.

2. Motivation—that is, the willingness to act—is the secret to a successful career.

3. Literacy, defined as the ability to read with understanding, is a concern for most educators.

4. He is mostly concerned with the formation and origin of the Earth; in other words, he is a geologist.

5. A space station—a kind of platform floating in space—will be used in the future as a meeting place for space vehicles.

How did the definition given in the context help you to understand what the unknown word means?

On other occasions, examples, explanations, and restatements can help you understand the meaning of unknown words. Read the following sentences and guess the meaning of the words in italics.

1. A sledge is used to carry people and goods in the snow.
   A ‘sledge’ is ________________________________________________.

2. He is a loner; he invites no one and keeps his address a secret.
   A ‘loner’ is ________________________________________________.

3. To build the new club, they pooled their resources, each giving a small sum of money.
   ‘To pool resources’ means to ________________________________.

4. This knife is so blunt that it does not cut at all.
   ‘Blunt’ is ________________________________________________.
5. Everyone can vote in our country: the educated and the ignorant, the 
affluent and the poor.

‘Affluent’ means ________________________________.

6. She likes warm colours such as red, scarlet, and vermilion.

‘Vermilion’ is ________________________________.

A final word on guessing

We’ve seen the different ways in which we can guess the meaning of unknown 
words that we come across in our reading. Nevertheless, it is important to 
remember that this is just one strategy and should not be used as the only one. 
You must build your vocabulary so that when you read you can count on more 
context to facilitate guessing the few words that you still don’t know.

You have to learn to know when you can guess efficiently and when you need to 
resort to other strategies such as using your dictionary. In the chapter about 
dictionary use we suggested that you not look up every unknown word while 
reading. Likewise, here we want to emphasize that you should not overuse the 
strategy of guessing meaning from context. Some contexts (those where you feel 
you know enough vocabulary) provide the best opportunities for successful 
guessing. If you feel you don’t know enough, work on building your vocabulary 
and learn to use your dictionary to check your predictions. This will help build 
your confidence.

Exercise 33: Nonsense words

The words that appear in italics in the following statements are nonsense words, 
that is, words that do not exist in English—therefore you cannot find them in the 
dictionary! But you can guess their meanings from the context . . . Can you? If you 
can, write an equivalent for each nonsense word and underline the words that 
helped you. If you can’t, double underline the words you don’t know but which are 
needed for understanding the nonsense word.

1. My father is a bodder. He can make beautiful things out of wood.
   Bodder = ________________________________

2. Alma is really gribb, but her sister is gribber, so she finds it easier to 
   find jobs.
   Gribb = ________________________________

3. Ben is quite grappy. He never lets anyone finish a sentence.
   Grappy= ________________________________

4. Last night, both Sherry and David became very gompered. They 
   wouldn’t stop shouting at each other.
   Gompered = ________________________________
Deciding when context is not enough

Read new text
Underline unknown words

For each new word

Check contextual clues and definitions

Clear

Go to next word

Unclear

Check morphological clues

Clear

Go to next word

Unclear

Look it up in dictionary

Focus on linking words

Identifying the function or purpose of a text helps us to understand WHY the author wrote this text and WHAT he wants to tell us. Next, the reader should understand HOW the author carries out his purpose.

**Linking words help the reader to follow the direction of a writer's thought.** They are like signposts on the road that guide the traveller. Common linking words show emphasis, addition, change of direction, illustration, and conclusion.

### Emphasis words

Among the most valuable signals for you to know are emphasis words, through which the writer tells you directly that a **particular idea or detail is especially important.** The following list contains some typical words showing emphasis.

- important to note
- most of all
- a significant factor
- a primary concern
- the most substantial issue
- a key feature
- the main value
- especially valuable
- most noteworthy
- remember that
- a major event
- the chief outcome
- the principal item
- pay attention to
- the chief factor
- a vital force
- above all
- a central issue
- a distinctive quality
- especially relevant
- should be noted

**Exercise 34: Recognizing emphasis words**

Read the selections that follow and underline the emphasis words.
1. One factor of great significance to the effectiveness of punishment is its severity. A severe or restrictive punishment can be extremely frustrating. Because frustration is one of the primary causes of aggression, it would seem wise to avoid using frustrating tactics when trying to curb aggression.

2. The narrowing of the pathways through the arteries by atherosclerotic plaque is our nation's most serious health problem. It can lead to a number of disorders.

Addition words

Addition words tell you that the author is going to continue in the same direction; the author is going to add on more points or details of the same kind. Typical examples of addition words are those indicating time and sequence, but they are not the only kind. Look over the following addition words.

<table>
<thead>
<tr>
<th>and</th>
<th>in addition</th>
<th>first, first of all</th>
<th>finally</th>
</tr>
</thead>
<tbody>
<tr>
<td>also</td>
<td>furthermore</td>
<td>second</td>
<td>last of all</td>
</tr>
<tr>
<td>another</td>
<td>likewise</td>
<td>the third reason</td>
<td></td>
</tr>
<tr>
<td>for one thing</td>
<td>moreover</td>
<td>next</td>
<td></td>
</tr>
</tbody>
</table>

Exercise 35: Recognizing addition words

Read the selections that follow and underline the addition words.

1. Involving the community and the larger society in combating child maltreatment means getting people other than parents to help with child rearing. One form of relief for abused and neglected children is to remove them from their parents' homes and place them in foster care. Another alternative is the use of “supplemental mothers” who are available regularly to baby-sit with potential maltreated children. Moreover, there are community-based “crisis nurseries” where parents can take their children when they feel they need to get away for a few hours. Ideally, crisis nurseries are open twenty-four hours a day and accept children at any hour without pre-arrangement in order to relieve or divert a crisis in the parent-child relationship.

2. The quality of our decisions is affected by the information we use in making them. For one thing, if we fail to consider carefully all available information, we can limit the number of alternatives or make a premature choice. Furthermore, the information we use may be distorted because it is outdated or misrepresented by its source. Also, we can unwittingly distort information because of our personal beliefs, attitudes and values. Finally, new information may change our decisions.
Change-of-direction words

Change-of-direction words prepare you for a change in the direction of the writer’s thought. They tell you that the writer will probably reverse or modify a previous statement. Look over the following change-of-direction words.

- but
- even though
- conversely
- instead
- in contrast
- yet
- on the contrary
- on the other hand
- still
- however
- otherwise
- nevertheless

Exercise 36: Recognizing change-of-direction words

Read the selections that follow and underline the change-of-direction words.

1. Males have dominated movies to such an extent that from 1966 to 1972 every movie that won the Academy Award for best picture did not have a major female role. There is some evidence, however, that the myth of machismo best exemplified by the Western and gangster movie is slowly receding in the movies.

2. The elderly age segment is another growing market that presents many opportunities for marketers, and it will continue to grow as longevity increases. Demand will rise for health care and services, books, nursing homes, travel, retirement housing, and many leisure-time activities. But people in this age group do not like to be stereotyped, and marketers must be sensitive in communicating with them.

Illustration words

Illustration words tell you that an example or illustration will be given in order to make an idea clear. Look over the following illustration words.

- for example
- once
- thus
- to illustrate
- for instance
- like
- specifically
- such as
- including

Exercise 37: Recognizing illustration words

Read the selections that follow and underline the illustration words.

1. Test markets are usually selected as being typical American cities with a good cross section of income and ethnic groups. Columbus, Ohio, for example, has long been known as an excellent city in which to taste new products and learn consumers’ reactions.
2. The qualities of leadership in human societies are not as cut and easy to see as they are in animal societies. Most people, for instance, have certain qualities that allow them to be leaders at one time or another, or in one situation or another.

Conclusion words

Conclusion words tell you to expect the writer’s last and possibly most important point within a paragraph or larger unit of thought. Look over the following conclusion words.

therefore  thus  hence  finally
consequently  in summary  in conclusion  as a result
last of all  so  at last  at the end

Exercise 38: Recognizing conclusion words

Read the selections that follow and underline the conclusion words.

1. When romance fades, all too often the marriage fades with it. Thus, by celebrating romance so avidly, we may be simultaneously undermining the very relationships we hope to promote stable, enduring, child-producing marriages.

2. Remember that even if you visit an individual and get a personal promise of a reference, there may be forty other students doing the same thing. Consequently, the professor may still have trouble identifying you without some reference form from which to work. The résumé provides this.

More linking word exercises

Exercise 39: Identifying linking words

Underline the main linking words in the selections that follow. Then, write down each linking word and identify whether it shows emphasis, addition, change of direction, illustration or conclusion.

1. All of us desire approval, particularly from people we love and respect. But too much reliance on the approval of others can do great damage to the self-concept. We can never really know what other people think of us. Furthermore, their opinions change. Therefore, if we rely on their approval in order to start liking ourselves, we are doomed to wait eternally since their approval will never be absolute or final.
2. It has tended to be true as a general rule, for example, that poor people vote Democratic and rich people vote Republican. Yet if we ask each why, neither usually connects his or her economic status with his or her vote. Nevertheless, the combination is such a common phenomenon that we suspect that there is a connection.

3. There are several cultural reasons why the aged are stigmatized and oppressed in American society. One is that the members of our society are obsessed with youth. We have traditionally associated a number of highly valued traits with youth, such as beauty, health, sexual vigor, happiness, usefulness, and intelligence. As a result of this association, those considered old are typically believed to be physically unattractive, sickly, asexual, useless, and incompetent. Second, in our rapidly changing, highly technical society, old people are considered to be unnecessary. Their wisdom represents another age that is irrelevant now. On the other hand, in simpler societies where tradition is paramount, the elderly are highly respected, admired, and even revered because they are repositories of the group’s accumulated wisdom.

Exercise 40: Thinking about linking word role

Read the statements below. Underline the words that join the phrases or the sentences. What role do they play in the sentences? The first one is done for you.

1. Gold is a pure metal, whereas steel is made up of various metals.
   This is used to __show the difference between gold and steel__

2. It was believed that sound travelled in particles; in fact, it travels in waves.
   This is used to ____________________________

3. Man and apes are similar physically. Correspondingly, their nervous systems are alike.
   This is used to ____________________________

4. Even though they are small, ants are proportionally much stronger than man.
   This is used to ____________________________
5 The experiment must be prepared correctly, otherwise it will not be successful.
   This is used to ________________________________________________________

6 An explosive reaction was expected, but, on the contrary, nothing happened.
   This is used to ________________________________________________________

Exercise 41: Choosing time and sequence linking words

Select the correct answer. Sometimes both answers are correct.

I'll give them your message  as soon as I get there.
 when

I'd like to visit the gallery  before leaving the city.
 then

Mary cleaned the kitchen  while I cleaned the bathroom.
 just as

I had a lot of problems at the store, but  eventually they gave me a reward.
 finally

I did my homework.  After, I went out.
 After that,

Exercise 42: Choosing addition and contrast linking words

 Although we left late, we still got there on time.
 In spite of

It was a fantastic evening  although the terrible food.
 in spite of

We decided to go  the cost of the tickets.
 in spite of

He thought the car was too expensive.  However, he still decided to buy it.
 On the other hand,

They enjoyed the course,  even though it was very difficult.
 whereas

I love the ocean  furthermore most of my friends prefer the mountains.
 whereas

We found a lovely bungalow near the lake we can rent.  In addition, it has its own swimming pool, and we
 However, have free use of a car.
Exercise 43: Choosing the correct linking word

Part A. Complete the following sentences with a word below. Discuss the meaning the word gives to the sentence.

- however
t- in fact
- in the same way
- instead
- rather than
- otherwise
- although
- on the contrary
- similarly
- whereas
- still
- while
- but
- in spite of
- on the other hand
- despite
- even though
- nevertheless
- correspondingly
- likewise

1. Glass is still made according to the principles discovered by the ancient Egyptians; ___________, the actual techniques are very different.

2. ______________ its fragility, glass can last for thousands of years.

3. Aluminium is not as heavy as steel. ____________, it has a wider variety of uses.

4. Plastics pollute the environment __________ glass does not.

5. Mathematics may be a pure or applied science. ____________.

   Physics can be classified into pure and applied.

6. ______________ that nature attempts to maintain equilibrium, man is always disturbing the natural balance.

Part B. From the list below, add a suitable word to the following statements in order to make a coherent sentence. Some words mean the same, so please use as many as possible for variety.

- therefore
- as a result
- in other words
- consequently
- however
- at the same time
- nevertheless
- in spite of
1. Many students find it difficult to read newspapers in English. 

____________________ not many read one regularly.

2. Most students living abroad are interested in news of their own country. 

____________________ they usually read the international news first in the newspaper.

3. Helen finds languages quite easy. 

____________________ she has little difficulty in learning English.

4. Some of the examination questions were difficult.

____________________ Mary managed to answer them satisfactorily.

5. The project was very complicated. 

____________________ Juan succeeded in completing it on time.
Focus on graphic organizers

A graphic organizer is a **visual representation of information and, in reading, is a way to organize the patterns and concepts of a text.** Why should we use graphic organizers? Well, their use in language learning is based on information from cognitive theory that says:

When we extract information from a text, it is easier to see the **connection between concepts.**

Information is stored in our memory in an orderly manner in a framework that is called a **schema.** When we activate our prior knowledge of a topic, this schema provides the frame for the new information we are receiving.

It’s **easier** for us to **remember** visual information than lots of written text.

When we use both **visual** and **verbal** language to create a graphic organizer, **we learn more.**

**Concept maps**

These are special forms of diagrams used for obtaining information, finding relationships between data and sharing the information gathered. They consist of cells that contain a concept, item or question and labelled links which show the link between the different concepts or ideas. Examples of kinds of concept maps are:
The Spider concept map

The main theme is placed in the centre of the map and sub-themes radiate outward. This kind of map can be used to describe things, concepts or propositions with support.

Key questions can be: What is the main idea? What concept is being described? What are its attributes? What does it do?

The Hierarchy concept map

Here the information is presented in a descending order of importance. The most important data is placed on the top. This kind of map is used to place things, people, places or ideas into categories.

Key questions can be: What items can be put together? (Level 1) How are they alike? (Level 2) How are they different? (Level 3)

The Flowchart concept map

These maps organize information in a linear format and are used to describe a series of events, stages in a process, life cycles and outcomes, all linked by time.

Key questions are: What is the event being described? What are the steps, phases, stages or events? How do these relate to one another? What is the final outcome?
Here are some other graphic organizers that will be useful:

**The Double Cell Diagram**

This is used to describe and compare the attributes and characteristics of two items, places, events or ideas.

**Key questions** are: What items are being compared? How are they similar? How are they different? The common areas are in the centre and the differences are in the outer sections.

**The Venn Diagram**

This is another map which can be used for describing, comparing and contrasting more than one item, idea or event.

**Key questions are:** What characteristics do they have in common? (intersecting parts) How do they differ? (non-intersecting parts).

**The Comparison Matrix**

This is used to describe and compare the attributes and characteristics of events, people, ideas or places.

**Key questions include:** What is being described? What characteristics are being compared? In what way are they similar or different?
The Fishbone

This type of map is used to show the causal interaction of complex events.

**Key questions** are: What are the factors that cause X to occur? How do they interrelate? Do these factors allow X to persist?

The Problem/Solution map

With this type of map, key questions help identify the problem, find several solutions and probable results.

Probable **key questions** include: Who did what? Why? How was it done? How can this situation be changed?

The Spider map

Very similar to the spider concept map, this type of organizer is good for distinguishing the topic, main ideas and details of a text.

**Key questions** are: What is the subject of this text? Who or what is the author talking about? What is important about this topic? What information supports this idea?

Remember: use graphic organizers when you read texts to help you **visualize the information more easily**.
Focus on Summarizing

What is summarizing?

Summarizing is the process of retelling the important parts of a passage in a much shorter form. It is an important reading skill. When you are able to summarize a passage, you can be confident that you have understood it.

A good summary should present a clear, concise idea of the main points of an article. It should include the main ideas and the major supporting points of what you have read.

How to write a One-Paragraph Summary

A paragraph summary should express the main points of an article in as few words as possible. When writing the summary there are three main requirements:

1. The summary should cover the original as a whole.
2. The material should be presented in a neutral fashion.
3. The summary should be a condensed version of the material, presented in your own words.

Here are some preliminary steps in writing a summary

1. Skim the text to determine the author’s thesis.
2. Reread the text, highlight important information and take notes on the main points.
3. Using your notes as guide, write the first draft of your summary. It should include:
   a. A topic sentence that states the name of the article, the author, and the source.
   b. A body that focuses on explaining, in your own words, the main ideas presented in the article, but do not include minor detail. An effective way to do this is by answering the questions what, where, when, and why.
   c. A final statement that summarizes any conclusions the author made in the article.
4. Revise the draft of your summary and be sure that you did not include any of your own thoughts or opinions about the topic.
5. Edit your summary to make sure that the grammar, spelling, punctuation, and capitalization are correct.
6. Go through the process again, making changes as appropriate.

Here is an example of a summary based on an article called “Global Implications of Patent Law Variation” which is presented below.

**Summary**

In his paper “Global Implications of Patent Law Variation,” Koji Suzuki (1991) states that lack of consistency in the world’s patent laws is a serious problem. In most of the world, patent ownership is given to the inventor that is first to file for a patent. However, the United States maintains a first-to-invent policy. In view of this, patent ownership can change depending on the country. Multiple patent ownership can result in economic problems; however, most striking is the international tension it causes. The fact that the United States does not recognize patent ownership in other countries, in violation of the Paris Convention on Industrial Properties, has prompted the World Intellectual Properties Organization (WIPO) to push the United States to review its existing patent law principles.

**Original article.**

*Global Implications of Patent Law Variation*

A patent is an exclusive right to use an invention for a certain period of time, which is given to an inventor as compensation for disclosure of an invention. Although it would be beneficial for the world economy to have uniform patent laws, each country has its own laws designed to protect domestic inventions and safeguard technology. Despite widespread variation, patent laws generally fall under one of two principles: the first-to-file and first-to-invent. The first-to-file principle awards a patent
to the person or institution that applies for a patent first, while the first-to-invent principle grants the patent to the person or institution that was first to invent – and can prove it. Most countries have adopted the first-to-file system. However, the United States maintains a first-to-invent system, despite obvious shortcomings. A result of countries employing different patent law principles is inconsistency of patent ownership.

Patent ownership is not recognized globally. On the contrary, ownership may change depending on the country. It is not uncommon for an invention to have two patent owners – one in the United States and one in the rest of the world. This unclear ownership often has economic consequences. If a company is interested in using a patented invention, it may be unable to receive permission from both patent owners, which in turn may prevent manufacture of a particular product. Even if permission is received from both owners, pay royalties to both may be quite costly. In this case, if the invention is useful enough, a company may proceed and pass on the added cost to consumers.

International economic tension has also been increasing as a result of differing policies. Many foreign individuals and companies believe that they are at a serious disadvantage in the United States with regard to patent ownership because of the logistical difficulties in establishing first-to-invent status. Further, failure of the United States to recognize patent ownership in other countries is in violation of the Paris Conventions on Industrial Properties, which requires all member nations to treat all patents equally. The conflict surrounding patents has prompted the World Intellectual Properties Organization (WIPO) to lobby for universality in patent laws. WIPO maintains that the first necessary step involves compelling the United States to reexamine its patent principle, taking into account the reality of a global economy. This push may indeed result in more global economic cooperation.

Taken and adapted from: How to Write a Summary available at
http://www.sa.sdsu.edu/dss/summary.pdf
Focus on rhetorical functions

As we’ve said before, the writer uses different organizational patterns to achieve the purpose for which he is writing the text. Let’s look at these in some detail.

What is a definition?

A definition is the formal statement of the meaning of a concept or a word. Definitions must be concise and relevant because they deal with the important characteristics of the concept. By recognizing definitions, you will focus attention on the significant points to be considered in the text.

Note that definitions are often marked in texts by punctuation marks such as a comma (,), or a colon (:). In some cases, the expressions ‘that is’ or ‘i.e.’ are used as definition markers. For example:

Infrared light waves, the waves that are in the right side of the spectrum . . .

Infrared light waves: the waves that are in the right side of the spectrum . . .

Infrared light waves, that is, the waves that are in the right side of the spectrum . . .

Infrared light waves, i.e., the waves that are in the right side of the spectrum . . .

The structure of the text should also answer questions such as “What is ______?” “What does ________ mean?”
Why are definitions used in technical texts?

Definitions help you, the reader, understand the subject of the discourse more fully. Definitions can help the writer clarify a description of a new technology or a new development in a technical field. For example, when a new laboratory procedure is devised, it is defined and then described in a technical journal. Definitions can also help a specialist communicate with a less knowledgeable audience. A manual that explains how to tune up a car will include definitions of parts and tools.

What are the types of definitions found in technical texts?

1. A parenthetical definition is a brief clarification placed in a sentence.

   Example: The divers soon discovered the *kentledge, the pig-iron ballast*.

2. A sentence definition is a one or two sentence clarification that usually follows a standard pattern: the item to be defined (the concept) is placed in a category of similar items (class) and then distinguished from the other items (characteristics).

   Example 1: A car is a vehicle that has a motor and four wheels and is used to transport things or people from one place to another.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Class</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A car</td>
<td>is a vehicle</td>
<td>that has a motor and four wheels and is used to transport things or people from one place to another.</td>
</tr>
</tbody>
</table>

   Example 2: A flip flop is a circuit containing active elements that can assume either one of two stable states at any given time.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Class</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>A flip flop</td>
<td>is a circuit</td>
<td>containing active elements that can assume either one of two stable states at any given time.</td>
</tr>
</tbody>
</table>

3. An extended definition is a long, detailed clarification of an object, process or idea. Often an extended definition begins with a sentence definition, which is then elaborated using comparison and contrast, analogy, negation, analysis, and exemplification among others.

   Example: A load-distributing hitch is a trailer hitch that distributes the hitch load to all axles of the two vehicles and the trailer. The crucial component of the load-distributing hitch is the set of spring bars that attaches to the trailer.
Writing definitions

Simple definitions can be written in the following way, starting with the term to be defined:

Term + Verb + General class word + Wh word + Particular characteristics

Example: A fossil is an inorganic trace which is buried by natural processes and subsequently permanently preserved.

Exercise 44: Understanding the form of definitions

Match the term to its definition. Then join the two sentences using the correct relative pronoun, that, which or who.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An engineer is a person</td>
<td>A. It produces electricity.</td>
</tr>
<tr>
<td>2. A microscope is an instrument</td>
<td>B. He studies the way in which industry and trade produce and use wealth.</td>
</tr>
<tr>
<td>3. A generator is a machine</td>
<td>C. It makes distant objects appear nearer and larger.</td>
</tr>
<tr>
<td>4. A botanist is a person</td>
<td>D. He treats the diseases of animals.</td>
</tr>
<tr>
<td>5. A square is a geometric figure</td>
<td>E. He designs machines, buildings or public works.</td>
</tr>
<tr>
<td>6. A cucumber is a vegetable</td>
<td>F. It gives information on subjects in alphabetical order.</td>
</tr>
<tr>
<td>7. An economist is a person</td>
<td>G. It makes very small near objects appear larger.</td>
</tr>
<tr>
<td>8. An encyclopedia is a book</td>
<td>H. He studies plants.</td>
</tr>
<tr>
<td></td>
<td>I. It is long and round with a dark green skin and light green watery flesh.</td>
</tr>
<tr>
<td></td>
<td>J. It has four equal sides and four right angles.</td>
</tr>
</tbody>
</table>


Let’s begin by looking at sentence definitions. Match each concept with its corresponding class and characteristics and/or examples. Then write down a definition for each concept.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Class</th>
<th>Characteristics and/or examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>dog</td>
<td>fruit</td>
<td>in the air</td>
</tr>
<tr>
<td>humidity</td>
<td>electrical appliance</td>
<td>orange-coloured peel / edible parts inside</td>
</tr>
<tr>
<td>lamp</td>
<td>animal</td>
<td>electric bulb / gives light</td>
</tr>
<tr>
<td>orange</td>
<td>instrument</td>
<td>a tail and four legs / a house pet</td>
</tr>
<tr>
<td>telephone</td>
<td>amount of water</td>
<td>transmitter and receiver / transmits the voice of a person in one place to another person in another place.</td>
</tr>
</tbody>
</table>

1. _______________________________________________________________________

2. _______________________________________________________________________

3. _______________________________________________________________________

4. _______________________________________________________________________

5. _______________________________________________________________________


**Exercise 45: Identifying definition components**

Identify the different components of the following definitions.

1. For some, God is a divine being considered as having power over nature and control over human affairs.
   
   What is the term being defined? ________________________________
   
   What are its specific characteristics? __________________________

2. The method which relies solely on observation and experiment is called empiricism.
   
   What is the general class it belongs to? _________________________
   
   What are its specific characteristics? __________________________
3. Introspection is the process by which a person examines his thoughts and feelings.

What is the term being defined? ________________________________

What are its specific characteristics? ____________________________

4. The intellectual capacity which enables a person to make use of mental powers with the intention to do something is called will.

What is the term being defined? ________________________________

What is the general class it belongs to? __________________________

5. Acids which always contain the element carbon are called organic acids.

What is the term being defined? ________________________________

What are its specific characteristics? ____________________________

6. Feedback is the provision of information about whether or not a person has achieved the intended objective.

What is the term being defined? ________________________________

What are its specific characteristics? ____________________________

7. Plastics are synthetic materials, products of the chemical industry.

What is the term being defined? ________________________________

What is the general class it belongs to? __________________________

8. Organisms that live on the host are known as ectoparasites.

What is the term being defined? ________________________________

What is the general class it belongs to? __________________________

What are its specific characteristics? ____________________________

Each of the terms defined in the above examples is linked to its characteristics by words such as ‘is,’ ‘is called,’ ‘are called’ and ‘are known as.’ The function of these words is to indicate that a term is being defined.

Look at the examples and identify the indicators of definition used in each.
Exercise 46: Identifying definitions types

Go back to the different types of definitions you can find in technical texts. Then read the following selections, underline each definition and indicate the example of the definition given. Some definitions will have several examples, but you need to mark off the example that makes the definition clear to you.

1. Mixtures are combinations of two or more elements and compounds, or of two or more compounds. The combination is merely a physical mixing. Therefore, the components of a mixture can be separated by physical means. For example, consider a mixture of iron fillings (element) and salt (a compound). We know this combination is a mixture because we can separate the components by a physical process. We can use a magnet to attract the iron away from the salt. Or we could place the mixture in water (which dissolves the salt) and filter, thereby separating the iron filings. The salt solution is also a mixture. The mixed compounds, salt and water, can be separated by the physical change of boiling the water away and thereby leaving the salt behind.

   Type of definition: ____________________________________________

   Term being defined: ___________________________________________

   General class: ________________________________________________

   Indicators: ___________________________________________________

2. Our self-concept is the product of learning. This learning goes on every day, usually without our being aware of it. Learning may be defined as a relatively permanent psychological change that occurs in us as a consequence of experience. Through the experience of falling in the bathtub and getting his nose full of water, a child may learn to fear the water. The same principle operates in the learning of the self-concept. A fat child, through the experience of listening to her classmates poke fun at her body, learns that being fat is bad and therefore that she is bad. In the learning of the self-concept, there are three important factors that must be considered: association, consequences and motivation.

   Type of definition: ____________________________________________

   Term being defined: ___________________________________________

   General class: ________________________________________________

   Indicators: ___________________________________________________
Exercise 47: Analyzing definitions

1. According to Bertrand Russell, mathematics may be defined as the science which deals with the logical deduction of consequences from the general premises of all reasoning.

   Term defined: _____________________________________________________________

   Indicator: _________________________________________________________________

   Characteristics: ____________________________________________________________

2. Elements possessing properties which are intermediate between metals and non-metals are known as metalloids.

   Term defined: _____________________________________________________________

   Indicator: _________________________________________________________________

   Characteristics: ____________________________________________________________

3. Broadly defined, a frequency changer is a machine which receives power at one frequency and delivers it at another frequency.

   Term defined: _____________________________________________________________

   Indicator: _________________________________________________________________

   Characteristics: ____________________________________________________________

4. Digestion can take place either outside or inside the cell itself. Digestion that takes place outside the cells, either in the environment or in a specialized cavity, is known as extracellular digestion. Digestion within the cell is known as intracellular digestion.

   Term defined: _____________________________________________________________

   Indicator: _________________________________________________________________

   Characteristics: ____________________________________________________________

5. A stethoscope is an instrument for studying sound generated inside the human body.

   Term defined: _____________________________________________________________

   Indicator: _________________________________________________________________

   Characteristics: ____________________________________________________________
Here are some more indicators of definitions. See if you can find them in the sentences that follow:

Astronomy
is defined as
is concerned with
deals with
relates to
involves

We can define
We can consider
In this context,
For our purposes,

Astronomy

Exercise 48: A final exercise on definition

Read the paragraphs below and answer the questions.

1. Parasitology may be defined as the branch of biology which deals with the nature of parasitism and its effects on both the parasite and the host. Broadly defined, a parasite is an organism which lives for all or part of its life on or in another organism from which it derives some benefit, such as food, shelter or protection. Organisms living on the host are known as ectoparasites; those living within the host organism are called endoparasites.

Paragraph taken from Bates/Dudley Evans, pp. 38

What terms are defined in the text? ________________________________.

Underline the words which point to these definitions.

What is the main definition in the paragraph?

Circle the more specific of the two: A. parasite B. endoparasites

Explain your choice. ____________________________________________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________

Give an example of an endoparasite and an ectoparasite. __________

_________________________________________________________________

_________________________________________________________________

_________________________________________________________________
2. Kinematics is the branch of applied mathematics that deals with the motion of bodies without considering the forces which produce such motion. When a body moves, so changing its position, the distance it has moved is measured by the length of its path of motion. Distance is therefore a scalar quantity. Speed is also a scalar quantity. Speed is defined as the rate of change of distance with time. The speed of a body measured in a definite direction is known as its velocity. Consequently, velocity is a vector quantity. If there is a change in either the speed of a body or its direction of motion, then the body is subject to an acceleration. We may therefore define acceleration as the rate of change of velocity with time. When the speed of a body decreases with time the rate of decrease of speed is known as deceleration.

Underline the words which point to the definitions in the text.

Write the terms defined in the text in the space below.

___________________________________________________________________

___________________________________________________________________

___________________________________________________________________

3. To compute is to calculate, or to solve a problem in arithmetic. Thus, we might assume that a “computer” can be defined as a machine that computes, or calculates. An electronic computer does calculate, but this is only one of the processes it carries out. The overall function of a computer is to process data. An electronic computer is correctly defined as a data processing machine.

A computer processes data. But what is data? Data is a set of facts, figures and information. Collectively, all the facts, figures and information that a corporation needs to prepare its payroll can be looked upon as data. All the income tax returns submitted to the federal government each year are data. A record of sales and inventory is another set of data.

Write the terms found in the text. ________________________________

How does the writer extend the definition? ________________________________
What is description?

To describe is to give the characteristics of something or someone. It emphasizes the physical nature and/or structure of an object (shape, size, colour, etc.) It may also give the relationship of the object to its surroundings (location, position). Some specific devices which are characteristic of description are:

- adjectives
- sense data
- descriptive sequence

1. Adjectives

The presence of adjectives is characteristic of description as adjectives tell us what something is like. Adjectives are words like short, old, cheap, happy, nice, electric, etc. An adjective modifies a noun; the function of adjectives is to give you a sense of the physical and other qualities of things (large, quiet, friendly) as well as the writer's opinion or attitude (excellent, beautiful).

2. Sense data

The second device typical of description is sense data, that is words, phrases and expressions that refer to the five senses: sight, touch, hearing, smell and taste.

We often use can and could for perceptions; e.g.:

- I can see something under the sofa.  We could hear music.
- I can smell something burning.  Sam could feel the weight of the rucksack.

3. Descriptive sequence

Finally, the third device is descriptive sequence or the structure the writer uses when describing the different parts or characteristics of the object/scene/person/situation.

In order to identify the structure of description, look for words or expressions such as:

- X has/have..., X consist(s) of..., X contain(s)..., X is/are characterised by..., X is/are made of..., X is/are composed of..., etc.

The structure should also answer questions such as:
How is \( X \)? Which are the characteristics of \( X \)? What does \( X \) look like? What are the parts of \( X \)?

Why is description used in technical texts?

Descriptions of objects, mechanisms and processes appear in almost every kind of technical writing. An engineer who is trying to explain to a sales staff how a product works, so they can advertise it effectively, includes a mechanical description. If a new law limits the amount of heated water that a nuclear power plant may discharge into a river, the plant managers have to understand how water is discharged. To do this, writers use description.

Take a look at these statements. What is the writer describing?

1. An atom consists of protons and neutrons forming a central nucleus, around which electrons revolve in orbits or shells.

2. Sedimentary rocks are composed largely of small fragments derived from the disintegration of existing rocks and in some instances from the remains of animals.

Exercise 49: Identifying descriptive text

Now let's look at some extracts. How can you identify them as being descriptive? What was the author's purpose in writing them?

1. “Sonar: is the name put together from “Sound Navigation and Ranging”. It uses high-frequency sound waves to measure ocean depths. An instrument on shipboard called a fathometer, using an electrical vibrator, sends a short blast of sound into the water. The waves produced, travelling at about 4,800 feet/second hit the ocean bottom and bounce back to a microphone on the ship. The time between the sending of the blast and the return of the echo is marked automatically on a moving strip of paper. With this information the distance to the bottom can be determined easily.

The author uses: A. adjectives B. sense data C. descriptive sequence

The author's purpose is to ___________________________________________

2. An octopus appears to be just a huge head with eight long, fearful arms. Its head is soft and rubberlike. It's eyes stick out on stalks so that it can see in all directions. Its mouth is on the underside of its body and has powerful jaws shaped like a beak. The long arms, or tentacles, have double rows of suckers. These can fasten onto objects with such suction that they cannot be pulled off.

The author uses: A. adjectives B. sense data C. descriptive sequence

The author's purpose is to ___________________________________________
What is classification?

When we divide something into groups, classes, categories, etc. we are classifying those items, i.e., separating objects from one another. The simplest classification divides things into those that show groups of characteristics that are shared and those that do not. For example, you would not place fish and birds together in the same class with trees and so the classification is made according to a criterion or several criteria. The criteria is the basic concept or idea that the author is using as the basis for grouping information. Let’s look at this first example.

Exercise 50: Determining criteria

Cross out the word that is not related to the other words in the rows below. Write the common criteria on the line to the right. The first is done for you.

1. red blue yellow square colours
2. morning year noon night
3. piano violin orchestra oboe
4. second five three six
5. minutes clock hours seconds
6. English Arabic Italy French
7. Saturn Venus Radium Mars
8. physics chemistry dance biology

In explaining how the words are related, you are classifying the information.

Criteria for classification

Materials are different from each other. For example, some are solids, others are liquids and others gases. By looking at the materials, smelling them or touching them, you can learn what their characteristics are. We can classify materials by their characteristics and in fact different materials can belong to different groups depending on the classifying characteristic that is used. Classify the following list of materials according to consistency (hard or soft, rough or smooth, flexible or rigid), taste (sweet or sour), physical state (solid, liquid or gas), edibility (edible or inedible), color, and size. Each time use a different characteristic and see how the materials group.

List of materials: coal, wax, vinegar, carbon dioxide, wood, stone, salt, syrup, milk, rubber, sponges, glass, bronze, steam.
Exercise 51: Identifying concept and criteria

Read the following paragraph and first highlight the concept being classified and then underline the criteria used for the classification. The first has been marked for you. Find the others.

Before Mendeleev, chemical elements were classified according to their properties. Mendeleev’s contribution was to find a much more exact system of classification, based on atomic weight. More recently, the basis of classification has moved to atomic number. Thus chemical classification has a quantitative basis while biological classification only has a qualitative basis. The basic criteria considered in biological classification are anatomical, ecological and genetical facts relating to each species. Sometimes it is also convenient to group animals with respect to their behaviour, their feeding habits, for example. The point about biological classification is that, unlike a quantitative classification, it gives few grounds for predicting the occurrence of unrecognised species.

What are the words that the author uses to indicate the criteria?

Exercise 52: Identifying indicators of classification

Now, take a look at these sentences. Can you identify the words which indicate classification? Underline them. The first one has been done for you.

1. Materials can be broadly divided into the following categories: metals and metal alloys; inorganic materials, ceramics and cements; organic substances, synthetic polymers; biological structures.

2. Reactions may be classified as combinations or decompositions.

3. Mechanical mixtures can be separated into the two or more phases that constitute them by suitable mechanical means: filtration, flotation, centrifugation, etc.

4. There are many classes of vertebrates: one class includes all those vertebrates which produce milk to suckle their young.

5. Other studies of blood DNA confirmed that humans should be grouped with the chimps and gorillas, leaving the orangutans and gibbons in two other groups.

6. Predation is another type of exploitation of one species by another.

7. The control of carbon dioxide is an example of homeostasis in which some sense receptors outside the central nervous system and others in
the brain itself affect coordinating centers in two different parts of the brain.

How did these words indicate that a classification was being made?

Types of classification

Information can be classified in several ways. For example, from general to specific, in other words, the text presents first the superordinate term and then the subordinate ones.

<table>
<thead>
<tr>
<th>Parasites</th>
<th>are may be can be could be</th>
<th>classified grouped divided arranged categorized</th>
<th>divisions groups types classes categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>The chemical elements</td>
<td></td>
<td>classified categorized grouped classed</td>
<td>X</td>
</tr>
<tr>
<td>There are three chief kinds classes categories</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of symbiosis: commensalism, parasitism and mutualism</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From specific to general, that is, a subordinate individual is an example of the superordinate class to which it belongs.

<table>
<thead>
<tr>
<th>The direction of the helix</th>
<th>is may be could be</th>
<th>classified categorized classed</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>an example of a type of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The amoeba is a kind of a form of a (n)</td>
<td></td>
<td>(an) animal that carries on only intracellular digestion</td>
<td></td>
</tr>
</tbody>
</table>
Exercise 53: A final exercise on classification

Go back to the previous exercise. Can you find the term being classified and the type of classification used based on the chart above? Tick the appropriate one.

1. ________________________  □ general to specific □ specific to general
2. ________________________  □ general to specific □ specific to general
3. ________________________  □ general to specific □ specific to general
4. ________________________  □ general to specific □ specific to general
5. ________________________  □ general to specific □ specific to general
6. ________________________  □ general to specific □ specific to general
7. ________________________  □ general to specific □ specific to general

What is comparison and contrast?

One of the common organizational patterns used in writing is the use of comparison and contrast. Here, we determine the similarities and/or differences between two or more objects, people, ideas, situations. Let’s look at this example. When we compare two or more cities, we look for things that they share, or have in common; population, transport systems, recreational facilities, types of structures etc. When we contrast things, on the other hand, we look for the ways in which they are different. In the case of our two cities, we might take the same criteria and see the ways in which the population, transport systems, recreation facilities and types of structures are different.

Why is comparison and contrast used in writing?

Comparison and contrast is a common writing technique in the technical field because institutions constantly decide between alternatives. Should we buy the model A computer, or the B, or the C? Should site A be used for the construction of the new chemical plant or should site B? Comparison and contrast is therefore used a lot in writing technical reports.

Comparisons and contrasts are also one way of classifying information. Here it is done by showing similarities and differences. Look at the following example of the classification of plant tissue.

We shall first divide all plant tissues into two major categories: meristematic tissue and permanent tissue. Meristematic tissues are composed of immature cells and are regions of active cell division; permanent tissues are composed of more mature, differentiated cells.
Comparison and contrast is also used with extended definitions where the writer discusses similarities or differences between the item being defined and an item with which the readers are more familiar.

**Exercise 54: Identifying comparison and contrast**

**Part A.** Read the following extract. What item is being defined? How does the writer do this?

A bit brace is a manual tool used to drill holes. Cranked by hand, it can theoretically turn bit to bore a hole in any material that a power drill can bore. Like a power drill, a bit brace can accept any number of different sizes and shapes of bits. The principal differences between a bit brace and a power drill are: a bit brace drills much more slowly, it is a manual tool and so it can be used where no electricity is available and it makes almost no noise in use.

**Item being defined:** ________________________________

The writer does this by: ________________________________

**Part B.** Let's look at the following text to answer these questions.

What is the author comparing? __________________________

In what ways are they similar? __________________________

In what ways are they different? _________________________

What words indicate the similarities and differences? **Underline** them.

Use a Venn diagram to map the information. Remember to put the areas in which they are similar in **C** and the differences in **A and B**.

The elements phosphorus (P) and silicon (Si) have numerous similarities and differences. They are both nonmetallic elements with comparable atomic numbers. Neither number is high: silicon's atomic number is 14 and phosphorus's number is 15. Their melting points are also parallel: the melting point of silicon is 1410ºC and that of phosphorus is 1554ºC. Nonetheless, phosphorus and silicon are dissimilar in many ways. Phosphorus is a yellow, waxy solid, whereas silicon often appears in a brown crystalline form. Phosphorus is used in fertilizers and detergents, but silicon, in contrast, is used in semi-conductor devices.

**Remember, Venn Diagrams are used to show similarities and differences.**
Part C. Let’s look at the following text to answer these questions.

What is the author comparing? ________________________________

In what ways are they similar? ________________________________

In what ways are they different? ________________________________

Assuming that the brain and the computer are both machines, how are the two to be compared? The exercise is interesting. Computers are invented by man and are therefore thoroughly understood, if human beings can be said to understand anything; what they do not know is what future computers will be like. The brain was created by evolution and is in many important ways not understood. Both machines process information and both work with signals that are roughly speaking electrical. Both have, in the largest versions, many elements. Here, however, there is an interesting difference. For cells to be manufactured biologically appears to be reasonably simple and neurons are in fact produced in prodigious numbers. It seems to be not so easy to increase the elements of a computer, even though the numbers are expanding rapidly. If synapses rather than neurons are considered to be elements of the nervous system, however, I can hardly imagine computers catching up. No one would want to be held to a guess as to the number of synapses in a brain, but 10 trillion would not be implausible.

Comparison and contrast indicators

Many expressions are useful for comparing and contrasting. These special words are signals to the reader that a comparison is being made. Let’s look at the chart below.

The general structure of a sentence indicating a contrast.

<table>
<thead>
<tr>
<th>Where microcosmos differs from is different from other hands-on programs is in its choice of subject matter.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlike</td>
</tr>
<tr>
<td>In contrast to</td>
</tr>
<tr>
<td>Compared to</td>
</tr>
<tr>
<td>In comparison to</td>
</tr>
</tbody>
</table>

| feline homebodies which are primarily nocturnal hunters, the wildcats hunt by day. |

The general structure of a sentence indicating a comparison.

<table>
<thead>
<tr>
<th>Titanium is a rare metal and, like similar to indium, very soft.</th>
</tr>
</thead>
</table>

| The trends in hardness, boiling temperature and $AH_{sub}$ resemble(s) parallel(s) those for groups I and II. |
Exercise 55:  A final exercise on comparison and contrast

Now look at the following statements. Decide what the writer is comparing or contrasting. Underline the similarities and highlight the differences.

1. Although the basic unit of the vertebrate kidney, the nephron, differs from that of the crayfish kidney in external appearance, the general process are parallel in both.

   The writer is comparing/contrasting: ________________________________

2. The chemistry of gallium is very similar to that of aluminum.

   The writer is comparing/contrasting: ________________________________

3. The strain rates computed for both the eastern and western sub-networks are comparable in magnitude and direction.

   The writer is comparing/contrasting: ________________________________

4. A computer can solve a complex problem in seconds; by way of contrast, men would take weeks, maybe months, to do the same operations.

   The writer is comparing/contrasting: ________________________________

What are chronological order and process?

When a writer organizes information by time, for example, when describing the development of an idea, the life of an individual or events which occurred, he is using chronological order. The writer usually states the events in the same order in which they occurred but sometimes, he may “flash back” to describe past events which affect the present or “flash forward” to show the results of present events.

When the writer describes the way in which something is done or the way in which a machine works, he is describing a process. In this case, the information is organized in strict chronological order because the steps or stages of the process, like in the case of an experiment, are all interrelated. That is, each step or stage, with the exception of the first, is dependent on the other.
Why are chronological order and process used in technical and scientific writing?

Time order is used when we have to describe the order in which important events occurred. A scientist who is asking for an increase in a grant to further research in genetics, might present the important events in the field leading up to his research. The process pattern is essential in all sciences when we describe the way in which a machine or a system works or an experiment is done. It is also used to give instructions.

How do we understand chronological order in a text? Let’s look at these examples.

Reorganize the following sentences to make a coherent text on the life of Darwin. Go through each of the sentences and find the logical link.

1. Charles Darwin (1809-1882) is the founder of modern evolutionary theory.
2. One study that led to this conclusion was that of finches on the Galapagos Islands, where closely related birds on different islands had developed quite different characteristics in response to their different environment.
3. Shortly after finishing his university studies, Darwin signed on as a naturalist for a five-year voyage of exploration on a ship called the Beagle.
4. Although strongly opposed by theologians at the time, Darwin’s view of life has since become accepted by all but a fringe element among religious thinkers.
5. During this trip, he became convinced that species were not immutable, but changed gradually over time.
6. In 1859, Darwin published On the Origin of Species by means of Natural Selection, perhaps one of the most influential books ever written.

The correct order is __1__ ______ ______ ______ ______

Sentence 1 states the topic of the paragraph (Darwin and evolutionary theory) and also tells us when he was born and died. We have to look for a sentence that tells us how he arrived at his theory. Sentence 2 talks about a conclusion. As we have no idea what Darwin concluded, this cannot be the following sentence. Sentence 3 talks about a trip that occurs after he graduated from university. So, we look for a sentence that is going to continue talking about his trip (Sentence 5). This sentence, then gives us the idea which is developed in sentence 2. We are then left with sentence 4 and 6. Sentence 4 talks about our belief today while sentence 6 describes events in the past. So, the order should be???

The text gave us the clues to put the sentences in the correct order. Remember:
1. The author sometimes includes words such as later, afterwards, to point out the order of events.

2. Dates are often used and logic tells us that 1832 comes before 1878

3. Structural and logical clues such as referents “... one study that led to this conclusion...” and verb tenses are used, “... Darwin’s view of life has since become accepted...”

Let’s take a look at some words that indicate chronology and are taken from a text called “The invention of the radio.”

<table>
<thead>
<tr>
<th>by (specific time)</th>
<th>By the early 1920s, there was a radio tube that could handle enough power for broadcasting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>during (period of time)</td>
<td>During the 19th century, important breakthroughs were made that led to the invention of the radio.</td>
</tr>
<tr>
<td>from (specific time) to</td>
<td>Radio communication has come a long way from the theoretical work of Maxwell in the 19th century to the practical inventions of the modern electronics industry in the 20th century.</td>
</tr>
<tr>
<td>until (specific time)</td>
<td>Until the 1940’s, this tube, the only amplifier, was the basis of the electronics industry.</td>
</tr>
<tr>
<td>in (year, month, season, decade)</td>
<td>Marconi did his first experiments in the spring of 1895.</td>
</tr>
<tr>
<td>on (day, date)</td>
<td>On June 30, 1948, they presented their new invention, the first transistor radio.</td>
</tr>
</tbody>
</table>

**Exercise 56: Identifying time indicators**

Now from the examples, see if you can identify some other words that also indicate time sequence. *Underline* them and then write them in the column. Some are done for you.
1. **Next**, Marconi used his new invention to help ships at sea.

2. A year later, he invented the first wireless telegraph.

3. After the invention of AM radio, radio broadcasting did not begin immediately for two main reasons.

4. The first important discovery was made by Maxwell.

5. He **then** discovered that when the antenna was higher, the waves went further.

6. Finally, Marconi transmitted radio waves from one side of the Atlantic Ocean to the other.

**Exercise 57: On your own**

Here are some other indicators of time. Find examples of their use in your readings. Write the sentence next to the corresponding word.

Stroke 13

Before ________________________________________________

Eventually ______________________________________________

While ________________________________________________

Subsequently ______________________________________________

Recently ________________________________________________

**Exercise 58: Placing information in the correct order**

**Part A.** Place the following sentences in their correct position in the text. Write the letter corresponding to the sentence in the space provided.

1. ___. He introduced the theory of electromagnetic energy. ___. In his paper he showed that when an electromagnetic force is changed, it travels through space as a wave. Maxwell, however, did not make electromagnetic waves, experiment with them, or
suggest using them for communication. He transmitted the first electromagnetic waves across a room, and he received the wave signal on a simple receiver. These waves were called Hertzian waves. Hertz did not think he could use his apparatus for communication.

a. In 1864, Maxwell published a paper which suggested that light was part of the electromagnetic spectrum.

b. In 1888, Hertz proved Maxwell’s theory.

c. The first important discovery was made by Maxwell.

d. Marconi, however, did believe that it was possible to use Hertzian waves for communication.

2. Guglielmo Marconi believed that it was possible to use Hertzian waves for communication. With this wireless telegraph, Marconi first transmitted electromagnetic waves a short distance, only across a room. He then discovered that when the antenna was higher, the waves went farther, even over a hill. In November, 1899, the American ship St. Paul received messages when it was almost 100 kilometers away from the transmitter. He built a special transmitter station on the coast of England and then took a ship to North America.

a. Finally, Marconi transmitted radio waves from one side of the Atlantic Ocean to the other.

b. Next, Marconi used his new invention to help ships on the sea.

c. Marconi did his first experiments in the spring of 1895.

d. A year later, he invented the first wireless telegraph.

e. In December 1901, when Marconi received three dots (…, “S”) on his receiver in Canada, he knew it was possible to transmit radio waves across the ocean.

f. Later, he discovered that it was possible to transmit the waves further when there was an antenna.

Part B. Reorganize the following sentences into a coherent paragraph.

Paragraph 1

1. Throughout most of recorded history, people believed in spontaneous generation.

2. The first was by an Italian physician named Francesco Redi.
3. This was the belief that life could arise spontaneously from nonliving materials.

4. The idea of spontaneous generation was a long time dying, and it took a series of experiments over a period of several centuries to lay it to rest.

5. In 1688, he showed that if meat was covered to keep flies away, maggots did not develop.

6. By the end of the eighteenth century, spontaneous generation of entire organisms had been pretty well discredited.

7. Thus, flies created the maggots which, in time, developed into new flies – life from previous life.

8. The Dutch scientist Antonie Van Leuwenhoek (1632-1723), using a recently developed microscope, followed the life cycle of the flea and showed that fleas, too, come from other fleas.

The correct order of these sentences is: ________.

A. 1, 3, 6, 2, 5, 7, 8, 4
B. 6, 1, 3, 4, 2, 5, 8, 7
C. 1, 3, 4, 8, 2, 5, 7, 6
D. 1, 3, 4, 2, 5, 7, 8, 6

Paragraph 2

1. Between 1855 and 1872 he published his investigations on color and color blindness.

2. His findings were published in 1873 in his great work “Treatise on Electricity and Magnetism”

3. His textbook, Theory of Heat, was published in 1871.

4. In 1856, J.C. Maxwell, a Scottish physicist, wrote a prize-winning paper about the rings around Saturn.

5. Maxwell is most famous for his studies in electricity and magnetism.

The correct order of these sentences is:_______

A. 4, 1, 2, 3, 5
B. 5, 1, 2, 3, 4
C. 4, 1, 3, 5, 2
D. 5, 2, 1, 4, 3
Exercise 59: Using a graphic organizer for chronological events

We can map chronological information on a time-line graphic organizer. Write the year in one column and the event which occurred in the next. Use the following encyclopedia entry on Edward Teller.

Teller, Edward (b. Jan. 15, 1908, Budapest, Hungary), physicist who made contributions in nuclear science and led as a scientist, administrator, and public advocate in the development of the hydrogen bomb.

Abstract of text biography. Teller studied at Budapest, Karlsruhe, Munich, and Leipzig, and received a PhD in physical chemistry. He continued his studies under Niels Bohr in Copenhagen and taught at the University of Gottingen. In 1935, he emigrated to the United States. By 1941, he joined Enrico Fermi's team that produced the first nuclear chain reaction. In 1943, he joined with J. Robert Openheimer on the secret atomic weapons project at the Los Alamos weapons laboratory in New Mexico. At war's end, he became the leading advocate of the construction of the hydrogen bomb. In 1958, he became director of the U.S. second weapons laboratory at Livermore, Calif. He also taught physics at the University of California at Berkeley. In 1962, the U.S. Atomic Energy Commission presented him with the Enrico Fermi Award.

<table>
<thead>
<tr>
<th></th>
<th>Edward Teller was born</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Process

Once you can detect chronological order in a text, process is easy because you are identifying the different stages in an experiment or a process. Let’s look at the first example which describes an experiment. First, read the text through, then underline the different stages of the experiment. Finally, read the sentences which follow and put the stages in the correct order by numbering them.

1. Hunter studied short-term memory in rats. He used a special apparatus that had a cage for the rat and three doors. There was a light in each door. First, Hunter placed the rat in the closed cage. Next, he turned one of the lights on and then off. There
was food for the rat only at this door. After the light was turned off, the rat had to wait a short time before it was released from its cage. Then, if it went to the correct door, it was rewarded with the food that was there. If the rat had to wait only ten seconds or less, it remembered which was the correct door.

---

Let’s look at another experiment. This time involving short-term memory of information which is heard. Follow the same procedure as in the first exercise.

2. The following procedure can be used to test short-term memory of information which is heard. Prior to the experiment, take ten index cards and write three consonants on each card. Use different letters on each card, for example LTV, QRX, ZYN, etc. To begin the experiment, sit facing a subject. Read the first card to the subject. Immediately after you read the card, give the subject a number, for example, 241. The subject must immediately begin counting backwards from that number by three’s (eg. 241, 238, 235, etc.) After ten seconds, say “Stop.” When you say “Stop,” the subject stops counting and is asked to tell you the letters. Keep a record of the number of correct responses. Wait five seconds and then read the next card. Repeat the procedure until you have read all ten cards.

---

Give the subject a number.
Read the first card to the subject.
The subject is asked to tell you the letters.
Repeat the procedure.
The subject counts backwards.
Sit facing the subject.
Write three consonants on each card.
Say “Stop.”
Go back through the texts. What are the words that indicate the different parts or stages of the experiment? ____________________________________________

Are they similar to the ones you find in texts that describe sequential events? If so, how? ____________________________________________

**How to identify process**

Here are some words which indicate the stages or steps in a process.

<table>
<thead>
<tr>
<th>First, First of all, To begin with, Initially,</th>
<th>electrodes are cemented on the subjects’ skin to measure their emotional reactions.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beforehand, Previously, Earlier, Prior to this, Before this,</td>
<td>the subjects had been given a thorough medical examination.</td>
</tr>
<tr>
<td>At the same time, Simultaneously,</td>
<td>lab assistants prepare the film the patients would be watching.</td>
</tr>
<tr>
<td>Next,</td>
<td>the subjects are placed in front of a 25 inch television screen.</td>
</tr>
<tr>
<td>After this, Afterwards,</td>
<td>they watch different scenes depicting important events in world history.</td>
</tr>
<tr>
<td>During this period</td>
<td>their emotional responses are measured.</td>
</tr>
<tr>
<td>Finally, To conclude, In conclusion,</td>
<td>the researchers study the subjects responses.</td>
</tr>
</tbody>
</table>

**Exercise 60: On your own**

Here are some more words which indicate that a process is being described. Find sentences which illustrate their use as you read other texts.

<table>
<thead>
<tr>
<th>The first step</th>
<th>The first stage is . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>The next step</td>
<td>The next stage is . . .</td>
</tr>
<tr>
<td>begins with</td>
<td>commences with . . .</td>
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Exercise 61: Working out stages in a process

Look at the following processes. You will find that the steps described contain very few of the words you found above. It describes the way in which coffee seeds are dried. Can you put the stages in order, anyway? Analyze each stage of the procedure logically. Use the structure of the sentence to help you.

Put the sentences in the correct order. Write the number in the space provided. Then give texts 2 and 3 a title.

Text 1. Drying coffee beans

1. The few remaining traces of pulp are then removed by washing.
2. If dried in the sun, they must be turned by hand several times a day for even drying.
3. First, the fresh fruit is pulped by a pulping machine.
4. The coffee seeds are then dried to a moisture content of about 12 per cent either by exposure to the sun or by hot-air driers.
5. Some pulp still clings to the coffee, however.

Text 2. The homogenizer is a pump which is capable of exerting considerable pressure on the milk, thus forcing it through a restricted opening.

1. The homogenizer is a pump which is capable of exerting considerable pressure on the milk, thus forcing it through a restricted opening.
2. The milk goes first to a clarifier.
3. The streams of milk then pass into a pre-heater.
4. The small size of the opening causes the milk to travel at high velocity.
5. The clarifier is a machine for applying centrifugal force.
6. The homogenizer thus prevents cream formation even after long standing.
7. The disks separate the milk into thin streams.
8. The preheater elevates the temperature of the milk to 130 F and then allows the milk to flow to the homogenizer.
9. It consists of a rapidly revolving bowl containing several disks.

10. This causes a reduction in the size of the butterfat globules.

Text 3. __________________________

1. As the mixture falls into the furnace, it meets with a blast of hot air which fires the coke and raises the temperature of the mixture to about 1800ºC.

2. Pig iron is extracted from iron ores such as iron carbonate.

3. As the coke burns, some of it reacts with the oxygen in the air to form carbon monoxide.

4. This mixture is then fed into a blast furnace.

5. First, the ore is mixed with coke and crushed limestone.

How did the words in the sentences help you place the stages in the correct order?

**Exercise 62: Using a diagram to understand a process**

**Part A.** Now, let’s see if you can use the diagram, which shows the distribution of electricity from the power station to the consumer, to put the stages in the correct order.

![Diagram of electricity distribution](image)

*Fig. 3*

*Taken from Glendinning, E. & McEwan, J. (1999). Oxford English for Electronics*
1. It is fed to substations.
2. It is stepped up by a transformer to high voltages for long distance distribution.
3. It is distributed via the grid to supply points.
4. It is distributed to the domestic consumer.
5. Electricity is generated at the power station at 25 kV.
6. It passes via the switching compound to the grid.
7. It is distributed via overhead or underground cables to intermediate substations.

Part B. Finally, let’s look at another graphic organizer, a cycle graph, that you can use with texts in which a process is described. Use it to map the information found in the text that follows.

Carbon, the basic element of organic chemistry, undergoes a natural cycle in the environment. It exists in the form of carbon dioxide in the atmosphere. From there it is absorbed by plants to build carbohydrates in green leaves. When plants burn, and animals breathe out, carbon dioxide passes back into the air. Also in decaying plant and animal remains, carbohydrates are broken down to release carbon dioxide into the atmosphere.

The passive voice

The passive voice is often used in technical writing to describe processes. We are often more interested in what was done than in who did the action. You may already know that texts in science and technology tend to use an impersonal voice when describing phenomena, events, etc. The passive voice is used to express this.

Remember that to form the passive voice, you must use the verb to be (be, is, are) and the past participle of the verb. The passive voice can also be formed with modal verbs (can, may, might, should).

In the sentence “The chemical is dumped into a flask” (be + past participle of dump), we are interested in what occurs to the chemical. If we were interested in who performs the action, we would say something like “Professor X dumps the chemical into a flask.”

Read the following paragraph and underline the verbs you consider to be in the passive voice. One is done for you.
Let us look at a very simple process as the chemist does it and as it might be done in a chemical process plant. The chemist takes a bottle of Chemical A from a shelf and pours the required quantity into a glass measure. The chemical is dumped into a flask and a second liquid, Chemical B, is measured and added in the same way. Chemical C, a powder, is weighed on a small laboratory scale and added to the two liquids. The chemist mixes the chemicals together by shaking the flask and heats the mixture over a small gas flame, with constant shaking. Finally, the mixture is rapidly cooled by placing the flask in a container of crushed ice. The chemist may have made a total quantity of a half-liter or less of product.

Taken from Hughson, R. V. The Language of Chemical Engineering in English, Regents Publishing Company, 1979.

Exercise 63: Writing a process

These sentences describing how a breakfast cereal is made are incomplete and in the wrong order.

Part A. First, complete each sentence by putting the verb in parentheses in the passive voice. Then, write out the correct order using the sequence of pictures to help you. Use the best sequence words to link the sentences. Be sure to give your text a title.

1. It (store) in the silos

2. These (weave) into biscuits.

3. The wheat (harvest) from the field

4. Each biscuit (bake) until brown.

5. It (cut) in thin strips

6. The grain (cook) to soften it.

7. It (pack) ready to be eaten.

8. The wheat grain (transport) to the silos.

Part B. Now, write out the correct order for the process using the sequence of pictures to help you. Use the best sequence words to link the sentences. Be sure to give your text a title.
Exercise 64: Writing and visualizing a process

The sentences for this exercise were taken from a description of the process for making glass bottles.

**Part A.** First, complete the sentences by putting the verb, given at the end of each, in the correct passive form.

1. It __________________ into bottles in the mould. (shape)
2. Sometimes broken glass ___________________ (add)
3. The bottles ____________________________ to strengthen the glass. (reheat and cool)
4. Glass _____________________________ from sand, limestone and soda ash. (make)
5. They are ready ______________________ (use)
6. Glass ______________________________. (produce)
7. This mixture __________________ strongly in a furnace (heat)

8. These three materials __________________ together in the right proportions. (mix)

**Part B.** Now, write out the process by placing each sentence in the correct order joined together by the most appropriate sequence words. Give your text a title!

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

________________________________________________________________________________

**Part C.** Finally, complete the following diagram with the key information of the process.

![Diagram](image)

**What is cause and effect?**

We see cause and effect relationships all around us. There was heavy traffic this morning, so you got to class late. You woke up late and you missed the bus! When a writer uses a cause and effect pattern in a text, he wants to discuss the reason something has happened. This is the *cause*. What occurs as a result of this action,
is the *effect*. Sometimes, one cause may lead to several effects and the effects can, in turn, become the cause of another effect. Let’s begin by recognizing cause and effect patterns in this passage.

When a load is placed on the platform, it causes the load cell to bend very slightly. This, in turn, causes a change in strain, which triggers a change in the electrical resistance of the strain gauge. As the resistance changes, so does the output voltage from the strain gauge. In short, the change in voltage across the strain gauge is proportional to the load on the platform.

*Text taken from Oxford English for Electrical and Mechanical Engineering*

Look at these sentences taken from the text above. They describe two actions. What is the relationship between them?

1a. A load is placed on the platform.  
1b. The load cell bends very slightly.

2a. The strain gauge is stretched.  
2b. The electrical resistance changes.

One is *the cause* and the other is *the effect* and they can be linked like this:

A load is placed on the platform, which *causes* the load cell to bend very slightly.

The strain gauge is stretched, which *causes* the electrical resistance to change.

Or it can be expressed by placing the effect first as in the following manner:

The load cell bends very slightly *because* the load is placed on the platform.

The electrical resistance changes *as a result of* the strain gauge being stretched.

The words in italics indicate cause and effect relationship.

Let’s look at some other sentences to find the cause and effect pattern and the words which indicate them. Remember to ask yourself questions.

1. When the air cools off at night, the surface of the rock contracts.

   **Cause:**

   **Effect:**

   **Indicator:**
2. Alternating periods of expansion and contraction lead to fragmentation.

   Cause: 
   
   Effect: 
   
   Indicator: 
   
3. As the drill turns, it collides with the metal, causing the atoms to speed up.

   Cause: 
   
   Effect: 
   
   Indicator: 
   
4. Normally, atomic nuclei repel each other because both have positive electric charges.

   Cause: 
   
   Effect: 
   
   Indicator: 
   
5. It is estimated that 80 to 90 percent of human cancer is related to environmental factors.

   Cause: 
   
   Effect: 
   
   Indicator: 
   
6. In 1929, 25 percent of the American population lived on farms. Due to higher wages, shorter working hours and a better social life in the city, many Americans have left the farms to work in the city.

   Cause: 
   
   Effect: 
   
   Indicator: 
Now that you’ve found some of the words which indicate cause and effect patterns in texts, let’s look at them more closely.

Cause and effect indicators

These are some words which indicate that the information that follows is the cause. Note that the writer can place the causes of an action or event in any part of his sentence.

As a result of | improved technology and skill, the productivity of American industry has increased during the 20th century.
Due to
Owing to

The crumbling of rock can be caused by:
- due to
- as a result of

As a result of

Richard wants to become a veterinarian, he has enrolled in veterinary school.

Likewise, authors can place the effect anywhere in the text.

Vitamin B1 deficiency causes
- leads to
Beriberi, a dysfunctioning of the nervous system.

Middle-aged individuals have already spent the money necessary for raising a family. They are starting to think about retirement.

Therefore, Consequently, So, Thus, For this reason, middle-aged people generally save a larger percentage of their money than young people do.

But, look at the next sentence. These words do not appear. Which action is the cause and which is the effect?

The sun’s rays heat up rock during the day and the rock expands.

You can ask the question “What does the heat do to the rock?” and the answer is that it causes it to expand.

Obesity facilitates the emergence of diabetes in certain individuals.

You can ask the question “Why are some people diabetic?” and the answer is because they are obese.
Exercise 65: Identifying cause and effect

There you have found the cause and effect relationship even though there were no words to guide you. These sentences include verbs that join cause and effect statements.

Can you identify the verbs and the statements that they link in the following sentences? Circle the verbs, underline the causes, and double underline the effects.

1. The introduction of computers has brought about significant changes in office routines.

2. Computers can create artificial objects in their memories. This allows developers to test product design without actually creating a real prototype.

3. A solar eclipse results when the moon comes between the earth and the sun.

4. It has been proven that extended periods of exposure to sun produce cancer of the skin.

Exercise 66: Thinking about cause and effect

Although it is important to recognize the indicators of cause and effect, it is perhaps more important to recognize the cause and effect pattern itself. In the following exercise, determine which comes first. Then draw an arrow from the cause to the effect. Finally, write sentences showing the relationship. Use as many different signal words as possible.

- Viruses
- Epidemics
- Headaches
- Improperly stored food
- Slow development
- Swimming in pools
- Heart trouble
- Skin cancer
- Infectious diseases
- Bacteria
- Colds and flu
- Food poisoning
- Improper nutrition
- Ear infection
- Diet high in fat
- Too much exposure to sun
Exercise 67: Interpreting similar cause and effect sentences

Do they mean the same? Read each sentence. Then circle the letter corresponding to the option which best matches the meaning of the sentence. Remember, first identify the cause (C) and then look for its effect (E). Use the charts to help explain your choice.

1. Increasing the temperature increases the rate of a chemical reaction.
   A. Chemical reactions cause an increase in temperature.
   B. An increase in the rate of a chemical reaction may be caused by increasing the temperature.

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<tr>
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<th>Original sentence</th>
<th>Option A</th>
<th>Option B</th>
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<td>Cause</td>
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<td>Effect</td>
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2. Ions are formed when an acid is dissolved in water.
   A. Ions cause an acid to be dissolved in water.
   B. Dissolving an acid in water causes ions to be formed.

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<th></th>
<th>Original sentence</th>
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<th>Option B</th>
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<td>Effect</td>
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3. Heating solid carbon dioxide (dry ice) produces a gas.
   A. A gas results from heating solid carbon dioxide.
   B. Carbon dioxide turns solid when heated.

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<th>Original sentence</th>
<th>Option A</th>
<th>Option B</th>
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<td>Effect</td>
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4. Mirages are caused by light rays bending in the air.
   A. Mirages can result from light rays bending in the air.
   B. Mirages cause light rays to bend in the air.

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<th>Original sentence</th>
<th>Option A</th>
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<td>Effect</td>
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Exercise 68: Using graphic organizers for cause and effect

Part A. You can also use graphic organizers to map the cause and effect pattern in texts. You can simply use an arrow to indicate the relationship, as in the example text below. Read the passage and then fill in the missing information in the organizer.

There are several factors to be taken into account when studying why some plants become weak or die. One reason is lack of water. Dryness in the soil causes the leaves to wilt, and may give rise to the death of the plant. On the other hand, too much water may result in the leaves drooping, or becoming yellow. While sunshine is necessary for plants, if it is too strong, the soil may be baked and the roots killed. However, if there is no light, the leaves will become pale and the stems thin. Consequently the plant may die.

1. Lack of water $\rightarrow$ dryness in the soil $\rightarrow$ _______________ $\rightarrow$ death of plant
2. _______________ $\rightarrow$ leaves droop or become yellow $\rightarrow$ death of the plant
3. Too strong sun $\rightarrow$ _______________ $\rightarrow$ _______________
4. _______________ $\rightarrow$ _______________ $\rightarrow$ _______________ $\rightarrow$ death of the plant

Part B. Now try to map the information from this text on another kind of organizer, a fish bone.

Headaches, with their characteristic pain or throbbing sensation in the head, are an extremely common complaint, experienced by almost everyone at some time or other. Occasionally, they are a symptom of an underlying disorder, but, if they occur on their own, developing gradually and clearing up with no side-effects, the probability is that they are totally harmless, apart from the discomfort they cause. Probably the commonest form of headache is caused by tension, from the contraction of the muscles of the neck, shoulders and scalp. The second commonest is the result of the swelling of local blood vessels. There can be many contributing factors. These range from stress, sleeplessness and drinking and eating too much, to noise and stuffy rooms, but, insofar as tension headaches are concerned, one of the commonest causes is poor posture. The muscles of the neck become tense and sore because they have to support the considerable weight of the head in an awkward position. Another common cause is eye strain. This can be due to the simple need for glasses. If headaches persist, it is as well to go to an optician for a check-up, and to work in a good light.
Below you will find some short texts which show the cause and effect pattern. Use an appropriate graphic organizer to map the information. Remember to first identify the causes and the effects.

1. Many people do not think of coffee as a drug. But, in fact, it is a drug and it has important effects on your body. Some of the effects are good and some are not. Coffee can help you stay awake when you are driving or working. But it can also keep you awake at night when you want to sleep. Coffee makes some people feel more alive so they can work better. Other people feel too nervous when they drink coffee. After a large meal, coffee can help your stomach. But too much coffee can cause a stomach ache.

2. In the United States, poor city children are often ill because of their diet. Some children do not get enough food. Sometimes they do not get healthy food. Poor health is also caused by bad housing. The apartments may not have heat in the winter or fresh air in the summer. Poor health may also be the result of dirty water. Or it may be caused by crowded apartments and crowded schools.

3. Actinic keratosis is an effect of many years of chronic over-exposure to sunlight. It usually appears as hard, gray, scaly patches of thickened skin surface. People with blond or red hair are more likely than others to develop the disorder. It is not cancerous, but it is classified as a pre-cancerous condition. There has been some difference of opinion among specialists concerning the exact relationship to cancer of some conditions described as pre-cancerous. It is widely believed, however, that there is a heightened likelihood of skin cancer among persons whose overexposure to sunlight has already produced actinic keratosis.

4. A pulse laser is basically a device for storing energy and then releasing it all at once to give a very intense beam of light. The heart of the laser is a crystal or tube of gas or liquid into which energy is pumped. This is usually done by surrounding it with a device to produce a powerful flash of light or an intense beam of radio waves or electrons. As pumping occurs, more and more of the atoms inside take up energy and are excited to high energy states. Suddenly an atom spontaneously returns to its first energy state and gives out a particle of light (a photon). This photon strikes another excited atom and causes it to produce another photon. Very rapidly, a cascade of photons develops. The crystal or tube is closed at both ends by mirrors and the photons bounce to and fro between them, building up the cascade. A proportion of this light is able to escape through one of the mirrors, which is half-silvered, and an intense flash of light emerges from the laser.

Exercise 69: Reviewing organizational pattern indicators

We've looked at the different organizational patterns a writer uses in the text: time sequence, either through chronological order or process, description where the author might have to define, classify, compare or contrast an idea or device and finally cause and effect. Let’s check your knowledge of the signal words with this exercise. Ask yourself “What does this word do in the sentence to make the meaning clear?”
Choose the best signal word for each passage. Look at the example below.

Example. During a temperature inversion, an upper layer of warm air acts like a lid. _______, polluted cooler air cannot rise, and harmful fumes pile up and make people sick.
   A. As a result
   B. However
   C. For example

The upper layer of warm air acts as a lid (i.e., a cover). You can infer that a cover prevents the cool air from rising. Therefore the correct option is A. Now you do the rest.

1. In December 1930, a dark smog of smoke and fog covered the Meuse Valley in Belgium. _______ the smog, sixty people died.
   A. In contrast to
   B. Because of
   C. In front of

2. Thousands of people may die from a killer smog. _____, 4,000 people were killed by thick black smog in London in 1952.
   A. For example
   B. Afterwards
   C. However

3. There is a lot of carbon monoxide in the air where there is a lot of traffic. _____ carbon monoxide prevents the red blood cells from carrying oxygen all over the body, people in traffic jams may get headaches or feel dizzy.
   A. Therefore
   B. Since
   C. Whereas

4. _________ the population of the world continues to increase at the same rate, there will not be enough resources on the earth to support all of the people in the future.
   A. Eventually
   B. During
   C. If

5. Sea birds have died in great numbers ______ oil which escaped from deep-sea wells.
   A. prior to
   B. owing to
   C. after

6. The smoke from the copper ore refinery in Ducktown, Tennessee, destroyed all the trees and plants on the hills around the refinery. Pine trees in the mountains east of Los Angeles have been killed by
photochemical smog. Smoke from the phosphate refineries in Florida contains fluorides which eventually kill cattle. ______, air pollution may have harmful effects on the ecology of an area.
A. In short  
B. Therefore  
C. Finally  

7. In the upper parts of a river, the water is clear and clean. As it flows past the farms on its banks, it picks up nitrates, phosphates, and pesticides. ______, it reaches the first towns along its banks, and it picks up sewage from home and factory drains.
A. However  
B. Generally speaking  
C. Next  

8. The method for producing fresh water from sea water is similar to the water cycle in nature. First, the sea water is boiled. _____, the water vapor is condensed.
A. Then  
B. Before  
C. Consequently  

9. Solid waste breeds rats, flies and mosquitoes if it is dumped on land. ______, it can make land for parks and other useful purposes if it is used to make sanitary landfills.
A. However  
B. On the whole  
C. In conclusion  

10. How does strontium 90 enter the human body? First, plants take up strontium 90 from the air. Then it enters the bodies of cows when they eat the plants. _______ humans drink milk from the cows. There is strontium 90 in the milk.
A. Finally  
B. While  
C. Therefore  

What is a hypothesis?

Hypotheses are found in all scientific fields and it is important that you, the reader, are able to detect a hypothesis when it is presented in a text. Let’s take a look at the different ways in which the writer can present his hypothesis.

To begin, what is a hypothesis? In the scientific world, when researchers find a possible explanation, or solution to a problem, an event or a phenomenon, they formulate a hypothesis. For example, in the fields of archaeology and paleontology, researchers make discoveries and use hypothesis
to explain why their finds exist. The discovery of a fossil of a whale with legs, vertebrae and tail led scientists to hypothesize that this creature may have been the link between aquatic mammals and ancient four-footed land creatures. Studies of the effect of smoking on unborn children show that, compared to those whose mothers didn’t smoke, these children are three to four times at greater risk of contracting AIDS. This brings us to a second important aspect of hypotheses: their basis.

A hypothesis is usually based on observations or on facts. Isaac Newton’s ideas on gravity came to him, history tells us, as he observed a falling apple. Charles Darwin’s theories about evolution came from his observations of nature during his trip to the Galapagos Islands. Once an observation is made and scientists come up with their idea, the hypothesis must be tested, for not all are always correct. Sometimes they may have to be rejected altogether or at least revised. As more research is done, and new information is obtained, old hypotheses must be refined. Today, as more satellites are sent into space to gather information about planets and galaxies, astrophysicists must change their hypotheses about the formation of the solar system. Work in the field of genetics is also forcing paleontologists to review their classification of early hominid fossils and is helping us to gain more insight into the evolution of our species.

However, you must not confuse a hypothesis with a theory. Theories are general explanations based on a large amount of data which are currently accepted by scientists. For example, the Theory of Evolution applies to all living creatures and is based on extensive observations. It is widely accepted by scientists. Nevertheless, there are many aspects of evolution that cannot be explained, like the gaps in the hominid fossil record. So, although many accept the Theory of Evolution, hypotheses must still be proposed and tested to explain those areas that are uncertain.

Another term which is frequently used is ‘principle,’ as in the principles of thermodynamics. A principle is something, usually a rule or norm, that is accepted as true and which is used as the basis for reasoning or conduct.

Once a hypothesis has been made, let’s look at the way in which it is expressed in English.

Expressing hypothesis in English

Most hypotheses are stated in the present simple tense, although it is possible to hypothesize about something that happened in the past or will happen in the future. Sometimes a hypothesis is expressed as a prediction, using the future tense with will. The meaning is the same as if the present tense were used. Saying something always happens is the same as predicting that it will happen. For example:

Objects fall with a speed proportional to their weight.
Hypotheses also indicate some degree of uncertainty or doubt that can be expressed by the use of modal verbs such as: *may, might, can, could, should* and *ought to*. For example:

A new study suggests that alcoholism *may* be inherited.

Scientists also try to predict what might happen in the future through the use of conditional clauses, like in the example below.

If the lab assistant follows the directions carefully, he will be able to replicate the results of the first experiment.

Let’s take a closer look at the use of conditional sentences in scientific writing.

There are three types of conditional statements in English and each:

- expresses a different meaning
- refers to a different time
- uses a different combination of tenses

Look at these sentences. All are predictions, yet there are differences. What are they?

1. If I have any free time, I will meet you.
2. If the standards were lower, more students would be accepted at USB.
3. If the flask had not exploded, the results would not have been affected.

The differences are: ____________________________________________________________

The first sentence refers to a situation that may or may not happen in the future. The prediction will come true if certain conditions are met. For example, I may have some free time, but I am not sure; however, if I have any, I will meet you. **This prediction will probably occur.**

A variation of this type of sentence is one that expresses a fact, an event that will always be true. If the conditions are given, the result will always be the same. **The prediction is certain to occur.** This type of combination uses **present tenses** in each clause. Look at these examples.

If drinking *continues*, alcohol *builds* in the bloodstream (in reference to the process of what happens when people drink.)

If the temperature *is raised* to 100°C, water boils.

The second sentence,

If the standards *were lower*, more students *would be accepted* at USB.
refers to a situation that does not exist (i.e., is not real) at the present time. This prediction will also come true if certain conditions are met. But since the conditions are unlikely to occur—the standards of admission to USB will not probably be lowered—the prediction is hypothetical. It may or may not come true. In the case of hypothesizing to solve a problem or explain a phenomenon, the prediction may or may not be the solution to the problem or the explanation to unknown phenomena. It must be subject to verification through research.

If decrepitude were an inevitable part of aging, life expectancy statistics would be worse.

If students ate a balanced diet and slept the proper amount of hours during weeks 5-6, their concentration would increase in exams.

The third sentence,

If the flask had not exploded, the results would not have been affected

refers to a situation that did not happen. The prediction would have come true in the past if the conditions had been met. However, the conditions are either impossible or did not exist in the past and so the predictions cannot be fulfilled. Let's look at some other examples.

1. If the lab assistant had followed the instructions carefully (but he did not), he would have replicated the methodological procedure of the first experiment.

2. If the researcher had known about the danger of using radioactive materials (but he did not know it at that time), he would not have used it.

What do you notice about the changes in the tenses used?

<table>
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<tr>
<th>Different types of conditionals</th>
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<tbody>
<tr>
<td><strong>Condition</strong></td>
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</tbody>
</table>
Past perfect | would could might | Present perfect | Impossible | If you had taken a taxi, you would have gotten here in time.
--- | --- | --- | --- | ---

Even if there are rules for the use of tenses in these types of sentences, writers and speakers very frequently use mixed combinations that do not follow these three patterns because of the need the author has to express his/her ideas. Look at the following example.

If the EPA officially brands secondhand smoke a known cause of cancer, the likely result would be greater restrictions on smoking in offices, restaurants and other public places.

**Exercise 70: Identifying types of conditional to express hypothesis**

Can you identify the types of conditionals in the statements? Indicate whether each of these sentences is certain (C), probable (P), improbable (I), or impossible (Im).

1. If the volcano had erupted, many people would have been killed.
2. If the iron bar were exposed to air, it would rust.
3. The satellite would have gone into orbit if it had reached a speed of 18,000 miles per hour.
4. If the air temperature drops below 0°C, the rain turns to snow.
5. If the milk were pasteurised, the harmful bacteria would be destroyed.
6. If the egg cell were fertilized by sperm carrying an X chromosome, the baby would be a girl.
7. If a fuel ignites, the engine will start.
8. If chlorine is inhaled in large doses, it will be fatal.
9. If neon is given an electric charge, it will glow.
10. If a cure is found for leukemia, many lives will be saved.
11. If the compound had been an acid, it would have turned the blue litmus red.
12. The calcium would melt if you heated it to 845°C.
13. Plants do not grow if they are deficient in oxygen.
14. If he ate a balanced diet, he would be healthier.
15. If the apple fell from the tree, potential energy would change to kinetic energy.
Probability

Writers often express hypothesis with words that indicate that these are tentative or unproven. What is the difference between these statements?

There is life on Jupiter.
There must be life on Jupiter.
There may be life on Jupiter.
There might be life on Jupiter.
It is unlikely that there is life on Jupiter.
It is impossible for there to be life on Jupiter.
There is no life on Jupiter.

In the first statement, the author is telling us that there is life on Jupiter. Obviously, he makes this statement based on solid evidence. In the second statement, however, the author is not 100 percent sure, although substantial evidence exists to suggest that it is highly probable that life exists on that planet. When we get to the third statement, we see that the writer is not sure of this hypothesis. There is a 50/50 chance that life may be or may not be found on the planet. In the statements that follow, the degree of certainty with which the author makes his point becomes less and less, until we get to the last sentence in which he affirms that there is no life on the planet Jupiter.

<table>
<thead>
<tr>
<th>Verbs</th>
<th>Degree of certainty</th>
</tr>
</thead>
<tbody>
<tr>
<td>complete</td>
<td>is (not)</td>
</tr>
<tr>
<td></td>
<td>will (not)</td>
</tr>
<tr>
<td></td>
<td>must (not)</td>
</tr>
<tr>
<td></td>
<td>certain(ly)</td>
</tr>
<tr>
<td></td>
<td>definite(ly)</td>
</tr>
<tr>
<td></td>
<td>clear(ly)</td>
</tr>
<tr>
<td></td>
<td>undoubtedly</td>
</tr>
<tr>
<td>strong</td>
<td>can/cannot</td>
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<tr>
<td></td>
<td>should (not)</td>
</tr>
<tr>
<td></td>
<td>probably (is)</td>
</tr>
<tr>
<td></td>
<td>presumably</td>
</tr>
<tr>
<td>partial</td>
<td>could (not)</td>
</tr>
<tr>
<td></td>
<td>likely/unlikely</td>
</tr>
<tr>
<td>Less strong</td>
<td>may (not)</td>
</tr>
<tr>
<td></td>
<td>might (not)</td>
</tr>
<tr>
<td></td>
<td>possibly (not)</td>
</tr>
<tr>
<td></td>
<td>perhaps (not)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Impersonal (i.e., no commitment)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>It is said that . . .</td>
</tr>
<tr>
<td></td>
<td>It appears that . . .</td>
</tr>
<tr>
<td></td>
<td>X reports that . . .</td>
</tr>
<tr>
<td></td>
<td>There is evidence to suggest that . . .</td>
</tr>
</tbody>
</table>

**Exercise 71: Identifying probability**

There are many ways to express probability. Look at the sentences below and underline the word or words that you believe indicate probability. The first one is done for you.

1. Light *seems* to travel in waves.
2. The accumulation of carbon dioxide in the air is believed to be warming the earth to a dangerous level.

3. Pulsars are thought by some scientists to be rapidly spinning neutron stars.

4. Current research suggests that obesity is hereditary.

5. The universe appears to be expanding.

6. As far as we know, the earth is 4.6 billion years old.

7. It is possible that the universe is expanding and contracting in some rhythmic way.

8. Theoretically, computers will be able to design and create in ways that are undreamed of today.

Copy the underlined words into the table below and add any additional words that you might know.

<table>
<thead>
<tr>
<th>Seem</th>
<th>Seem</th>
<th>Seem</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

**Exercise 72: Identifying hypothesis**

Now that we know how a hypothesis is written, try to identify the sentences which contain one by circling the correct option. Underline the word or words that helped you decide.

1. A. Migration is the seasonal movement of animals from one place to another.  
   B. Birds may be guided in their migration by the position of the sun or stars.

2. A. Rocks fall faster than feathers.  
   B. There may be a fifth force in nature that causes objects to fall at different rates.

3. A. Certain types of music may relieve stress.  
   B. During the Middle Ages, music was used to treat certain diseases, such as the plague.

4. A. The Big Bang was first proposed by a Belgian mathematician, Abbe George Le Maitre, in 1927.
B. The universe was born about 18 billion years ago when a cosmic egg, containing all the matter and energy existing in the universe today, exploded into millions of pieces.

5. A. Dinosaurs may have become extinct because their brains were not proportional to their brawn.
B. Some elephants, whales, dolphins, and porpoises have brains larger than the human brain.

Exercise 73: Distinguishing fact from hypothesis

Look at the following statements. Are they facts or hypotheses? Write F or H in the space provided, then underline the word or words that helped you decide.

1. Cancer-producing chemicals have been found in soot. They are suspected of causing lung cancer, but proof is still lacking. __________

2. One health expert believes that there are 25,000 cases of lead poisoning among children in New York City and about 8,000 in Chicago. __________

3. Soot and fumes produced by furnaces can be removed by several methods. ______

4. Unless atomic energy plants are built and run with great care, harmful radioactive substances may enter the atmosphere. __________

5. The automobile is now the chief cause of air pollution. __________

6. Perhaps more people will have to use trains or buses to travel in the cities. _______

7. There is no shortage of water in the world, except in desert areas. __________

8. Market demand is how much of a product all the consumers will buy at each price. _______

Detecting evidence

As we’ve said before, hypotheses are based on observations and once the hypothesis is made, it must be tested for the researchers to know if their ideas are correct or not. This evidence is usually obtained from observation or experimentation combined with reasoning. Let’s now turn to detecting evidence which supports a hypothesis.

Read the following passage. Underline the evidence given by the writer to support his hypothesis that smoking is harmful to health.
Where There’s Smoke, There’s Fire

It was not too long ago that smoking by adults was not viewed as dangerous. Its long-term effects were not visible and had not been conclusively demonstrated. Then, in 1964, the Surgeon General of the United States announced that smoking had been proven by scientific research to be detrimental, or harmful, to health.

Since then, more and more evidence has accumulated to indicate that smoking is harmful. Smoking is related to many heart and circulatory ailments. The tobacco plant contains nicotine, a chemical that is poison in its pure form. It has been demonstrated that nicotine increases the rate of the heart, intensifies the effects of high blood pressure, and causes the constriction or tightening of the blood vessels, thus contributing to heart disease.

Smoking is the most significant factor in respiratory diseases. It can damage the tiny hairs (cilia) that line the breathing passages, thereby causing emphysema or chronic bronchitis. Research also confirms that the tar in cigarette smoke is carcinogenic, that is, it can produce cancer in any tissues it comes in contact with, such as the mouth, the throat and the lungs.

There is also a correlation between smoking and birth defects. The evidence indicates that pregnant women who smoke a pack of cigarettes a day have a greater likelihood of having a miscarriage, a premature baby, a smaller-than-normal baby, or a baby with mental retardation or heart defects.

Smokers often become physically and psychologically dependent on their habit and suffer withdrawal symptoms if they attempt to stop. Even the onset of a smoking-related illness is not always sufficient to enable heavy smokers to quit. Despite all the information made available to the public since 1964, in 1985 the American Lung Association estimated that there were 250,000 premature deaths due to smoking in the United States per year.

The four statements that the writer uses to support his point are:

1. Smoking is related to many heart and circulatory ailments.
2. Smoking is the most significant factor in respiratory diseases.
3. There is a correlation between smoking and birth defects.
4. Smokers often become physically and psychologically dependent on their habit.

Go back to the text and find the facts that the author uses to support each one of these statements. What word/s does he use to indicate that this evidence is based on facts and not his own ideas? The words are:

Exercise 74: Finding evidence to support conclusions

Part A. In the following pairs of statements, you will find a conclusion and the evidence on which it is based. Underline the conclusion once and the evidence twice.
1. A plastic raincoat prevents the rain from penetrating, but a wool coat does not. Plastic is impermeable to water and wool is not.

2. If a bottle of perfume is left open in a closed room, the smell will eventually spread all over the room. The molecules of a gas spread, or diffuse, to fill the entire area.

3. The earth is round. A person traveling directly east from the equator will eventually return to the starting place.

4. Life as we know it cannot exist on Venus. There is no oxygen or water on Venus.

5. Death often occurs when drugs and alcohol are used together. Certain combinations of alcohol and drugs can be fatal.

6. Morphine is addictive. Hospital patients who are given morphine as a pain reliever sometimes develop a physical dependence on the drug.

7. Glass is fragile, or breakable. A glass bottle dropped on a hard surface is likely to break.

**Part B.** Now, circle the letter of the conclusion that can be drawn from each of these statements.

1. When the water in a closed bottle is heated, the water rises.
   A. Water evaporates when heated.
   B. Water expands when heated.

2. The shapes of the earth's continents fit together like pieces of a big jigsaw puzzle.
   A. The continents were once one land mass that broke into parts that drifted apart.
   B. The earth is expanding just as the universe is.

3. There is a high statistical correlation between smoking and emphysema.
   A. Emphysema patients like to smoke.
   B. Smoking is a cause of emphysema.

4. The space between the sun and the earth is cold.
   A. The sun is not as hot as it used to be.
   B. The rays of the sun warm what they touch but are not hot themselves.

5. When a bean seed is grown in the dark, the plant soon dies.
   A. Bean plants need light to survive.
   B. Bean plants need light to turn green.
Once the evidence which supports the hypothesis has been obtained, the researcher must draw conclusions based on these facts. To do this, most scientists use two types of reasoning: deductive and inductive reasoning. Let’s look at them both.

**Deductive and inductive reasoning**

We use **deductive reasoning** when we go from a general assumption or premise to a specific conclusion, as in the example which follows:

- **General assumption**: All metals are good conductors of electricity.
- **Specific conclusion**: Zinc is a metal. Therefore, zinc is a good conductor of electricity.

On the other hand, with **inductive reasoning**, we move from a specific observation to a general conclusion.

- **Specific observation**: Smoke causes cancer in rats.
- **General conclusion**: Therefore, smoke causes cancer in all living things.

**Exercise 75: Detecting inductive and deductive reasoning**

Decide whether the following statements show inductive (I) or deductive (D) reasoning. Then, discuss with your classmates if the conclusion is valid or not. Has the reasoning led to a false conclusion? Justify your position.

- **1.** Iron silicates are green, iron carbonates are yellow-brown, and iron oxides are red. All iron compounds are colourful.  
  **Conclusion**: Is **valid** or **not valid**. Because ________________________  
  **D**

- **2.** Tigers, horses and dogs have tails. All four-legged animals have tails.  
  **Conclusion**: Is **valid** or **not valid**. Because ________________________  
  **D**

- **3.** AIDS is a venereal disease. It is sometimes transmitted by blood. All venereal disease may be transmitted by blood.  
  **Conclusion**: Is **valid** or **not valid**. Because ________________________  
  **D**

- **4.** Carbohydrates convert starch into sugar in the body. Potatoes are carbohydrates. Potatoes convert starch into sugar.  
  **Conclusion**: Is **valid** or **not valid**. Because ________________________  
  **D**

- **5.** Automobiles give off carbon monoxide. Carbon monoxide is a poisonous gas.  
  **Conclusion**: Therefore automobiles cause air pollution.  
  **Conclusion**: Is **valid** or **not valid**. Because ________________________  
  **D**

- **6.** Penicillin stops the growth of bacteria. Pneumonia is caused by bacteria.  
  **Conclusion**: Penicillin is effective against pneumonia.  
  **Conclusion**: Is **valid** or **not valid**. Because ________________________  
  **D**
Conclusion is □ valid □ not valid.
Because

Once the researchers have formulated their hypotheses through observation, tested them through experimentation and reasoning, they then present them to the public. In its written form, it is now left to the reader to decide whether the information stated on paper is based on fact or the writer's opinion. How do we separate the two?

Separating facts from opinion

A fact is something that is based on direct evidence or observation and can be tested, and therefore verified, by more than one person on different occasions. Facts can be found in textbooks, reference material and official documents. They are expressed in precise numbers and quantities and through neutral language. Let’s look at some examples of facts. How can you tell that they are facts?

1. A woman won the silver medal for rifle shooting at the 1994 Olympics.

2. FAA investigators stated that the crash of the TWA flight 109 was caused by faulty landing gear and not pilot error based on the evidence that was recovered.

Each of these statements can be checked and the information verified. Opinions, on the other hand, are subjective in nature and are usually expressions of the writer's feelings or beliefs on a topic. They express attitudes, make judgement, express approval or disapproval. Opinions most often involve abstract concepts that are difficult to define and on which, as a result, each person has his own personal view. Concepts of right and wrong, fair play, loyalty, the right to live and the right to die. Opinions cannot be verified like facts.

Although opinions cannot be checked or verified for accuracy, you as a reader can determine the validity of the opinion. Does the writer support his opinion with evidence, facts or reason? Does he cite respected authorities in the field who agree with his point of view? Is the writer an expert or authority in his field? Does he have the knowledge and experience to make his statements?

Sometimes the writer's opinion may seem to be based on facts but it is still the individual's point of view and not a fact in itself. If someone were to write that J.K. Rowling is an excellent writer who, in less than six years has risen from rags to riches based on her Harry Potter series, we could say that while it is true that Ms. Rowling has become a millionaire based on her writings, it is the author's opinion that she is an excellent writer. The use of adjectives to express quality is usually an indication that an opinion is being given.

Sometimes writer's express their opinions by using certain qualifiers such as believe, think, in my opinion, feel and suggest. However, there are occasions in
which the writer does not use any of these indicators and it is up to the reader to determine if the statement is a fact or an opinion.

Separating fact from opinion is very important when we read reviews as we shall see later on in this section.

**Exercise 76: Identifying fact and opinion**

**Part A.** Study the following groups of statements. In each case, identify the italicized portion as fact or opinion.

1. More and more women are deciding to give birth to their children at home. A hospital, after all, is not the best place for a baby to be born.  
   - Fact  
   - Opinion

2. Once the cavity reaches the dentin (the hard, dense, bone-like material that composes the principal mass of the tooth), it must be cleaned and filled. Some researchers, however, are beginning to question whether periodic cleaning and checking of the enamel (the calcareous substance that forms a thin layer capping the teeth) plays a significant role in preventing tooth decay.  
   - Fact  
   - Opinion

3. More and more women are deciding to give birth to their children at home. A hospital, after all, is not the best place for a baby to be born.  
   - Fact  
   - Opinion

4. B. J. Vukovich, author of the best-written novel of the disaster genre, will speak at tonight’s “How I Became An Author” meeting.  
   - Fact  
   - Opinion

5. Philip Luttgen, satirical columnist for the Daily Views, will give a rebuttal entitled “What Is An Author?”  
   - Fact  
   - Opinion

6. The national coal strike, now into its seventh week, has caused untold hardships on the miners, their families, and the rest of the winter-weary nation.  
   - Fact  
   - Opinion

**Part B.** Read these statements. Do they express facts or the writer’s opinion? Mark the correct option. Give the criteria you used to make your selection.

1. In endurance events such as running and long-distance swimming, women do very well (The author cites two examples.)  
   - Fact  
   - Opinion. Criteria: ____________________________

2. Mothering is an activity that is learned, not inborn.  
   - Fact  
   - Opinion. Criteria: ____________________________

3. Sex hormones program our bodies to develop as male or female.  
   - Fact  
   - Opinion. Criteria: ____________________________
4. Men commit more violent crimes than women.
   - Fact  - Opinion. Criteria: _________________________________

5. Women are just as good as men at driving a car.
   - Fact  - Opinion. Criteria: _________________________________

6. Women are more verbal than men, while men are better than women at visual-spatial activities. (The author gives results of six studies)
   - Fact  - Opinion. Criteria: _________________________________

7. Television has undoubtedly helped to make the public aware of political and social development, anti-TV critics consider.
   - Fact  - Opinion. Criteria: _________________________________

8. Men have greater muscle mass and larger hearts and lungs than women.
   - Fact  - Opinion. Criteria: _________________________________

9. Television has had an enormously positive influence on America by bringing families together.
   - Fact  - Opinion. Criteria: _________________________________

As we have seen throughout this guide, writers use language to communicate their ideas to the reader, be it to inform us about new developments in a field or to give us their point of view with regard to a topic. Writers often try to influence us to accept their point of view and they do this by presenting an argument. Let's turn now to argumentation.

**What is an argument?**

An argument is the act of reasoning to establish or reject a position. The purpose of an argument is generally to present a particular point of view. The authors may want to persuade people of the importance, necessity or correctness of their point of view, defend their position and perhaps even attack a different point of view. They do this by presenting facts, evidence and reasons to support a conclusion. However, to shape a convincing argument, the authors need more than just a collection of facts. They need to analyze the topic, establish relationships among disparate elements, and weigh evidence. A good argument reasons and draws sound inferences from facts, and in order to do this, it also incorporates values. The authors forge a position on an issue based the evidence they gather and analyze, and the beliefs and values they hold.

The opinions and values of the authors are predominant in argumentative texts. So you, as a reader, have to be able to evaluate the validity of the arguments put forward by the writers. How do you do it? First of all, a good argument is based on solid evidence and sound reasoning. When you read an argumentative text, remember what you learnt in the section on facts and opinions and the different
types of reasoning. Use that information to help you determine whether the authors are being objective or not.

Let’s look at an example of an argumentative text regarding stem cells. As you read it, try to identify if there are one or more positions presented.

“Stem cell research offers a potential cure for many fatal diseases. Many people oppose stem cell research because it involves using cells from human embryos. Although there are certainly reasons to be cautious with stem cell research or any new technology, I believe that its potential benefits far outweigh its dangers. In my opinion, stem cell research should receive the full support of our government.”

Are there one of more positions presented? Explain your response

Identifying arguments

Let’s look at some other examples of argumentative texts taken from the web page of the Royal Society of Science http://royalsociety.org/. Identify and underline the words which, in your opinion, indicate argumentation.

The genetic modification of plants raises important issues for science and the public, and the Royal Society encourages debate, informed by sound science, about the potential benefits and risks of this technology. The Royal Society has provided advice to policy-makers on GM plants during the development of this branch of science and has published a number of reports on this issue. In 2003, the Royal Society contributed to the Governments national debate on the commercialization of genetically modified crops in the UK, by encouraging the participation of scientists and holding events through which some of the main GM issues could be discussed.

Along with the great majority of the scientific community, the Royal Society considers that the benefits arising from scientific research which uses animals justifies their use. At the same time, the Society also recognizes that special ethical considerations are involved and that animal research must be undertaken only with the greatest care to minimize the suffering of the animals used in research. The Royal Society takes an active role in policy discussions on the use of animals in research, and has a standing Committee to discuss issues related to the use of animals in scientific research.
Natural resources are being utilized at unprecedented levels. Biological diversity is being lost at a rate unequalled since the appearance of modern ecosystems more than 40 million years ago. A quarter of all mammals are threatened with extinction and nearly 70% of the world's fish stocks are fully exploited, overexploited or depleted. The Society believes that measures designed to forward conservation efforts must be appropriate and be underpinned by sound science in order to assess the success of any mitigating actions.

**Common indicators in argumentative texts**

Some other words that may appear in argumentative text are presented here. Can you think of any others? Write them down in the empty spaces.

<table>
<thead>
<tr>
<th>agree</th>
<th>believe</th>
<th>debate at issue</th>
<th>it appears to me/her/him</th>
<th>think</th>
<th>sound</th>
</tr>
</thead>
<tbody>
<tr>
<td>argue</td>
<td>cast doubts on</td>
<td>dilemma</td>
<td>it is clear that</td>
<td>well-grounded</td>
<td>logic</td>
</tr>
<tr>
<td>assume</td>
<td>claim</td>
<td>disagree</td>
<td>it seems to me/her/him</td>
<td>between the bounds of possibility</td>
<td>rational</td>
</tr>
<tr>
<td>be certain / be uncertain</td>
<td>contend</td>
<td>from my/his/one's point of view</td>
<td>speculation</td>
<td>sound reasoning</td>
<td>counter argument</td>
</tr>
<tr>
<td>assumption</td>
<td>controversy</td>
<td>in my/his/one's opinion</td>
<td>suppose</td>
<td>proposition</td>
<td>common sense</td>
</tr>
</tbody>
</table>


Keep in mind that an argumentative text usually contains these five key elements:

1. An explanation of the issue
2. A clear thesis statement
3. A summary of opposing arguments
4. Rebuttal to the opposing arguments (rebut means to point out problems with the other side’s reasons to prove that they are not good reasons).
5. The author’s arguments

Now go back to the previous texts and find examples of these key elements

When you read an argumentative text take into account the following questions:

1. Do the ideas presented in the text make you think seriously about your personal position or belief on the subject?
2. Does the author base his/her analysis on sound evidence or on personal opinion or preference?
3. Is the author trying to convince you to accept one point of view?
4. Is the author simply presenting different arguments and lets the reader decide for herself/himself?

Look at the following exercise. You will find several statements. If you agree with the point of view write A, if you don’t write D. Then give at least three reasons why you agree or disagree. What type of evidence or reasoning would you use to support your position?

___ 1. A lot of women are perfectly happy to stay home and be housewives.
   a. ______________________________________________________________
   b. ______________________________________________________________
   c. ______________________________________________________________

___ 2. The government shouldn’t give money to people who don’t want to work.
   a. ______________________________________________________________
   b. ______________________________________________________________
   c. ______________________________________________________________
3. Watching a lot of TV is bad for young people.
   a. ________________________________________________________________
   b. ________________________________________________________________
   c. ________________________________________________________________

4. Animal experimentation is immoral and should be banned.
   a. ________________________________________________________________
   b. ________________________________________________________________
   c. ________________________________________________________________

Book Reviews

Separating fact from opinion is also very important when we look at reviews. A book review is an article in which the author summarizes and evaluates a book. It usually includes objective descriptions of different aspects of a book, along with the personal opinion of the reviewer, and a recommendation of the book to the readers whom the reviewer thinks might be interested in reading the book.

Let’s begin by examining some extracts from the review entitled “Unraveling Space and Time” by Lee Smolin who is reviewing the book The Fabric of the Cosmos: Space, Time, and the Texture of Reality by Brian Greene.

As you read the following extract, try to identify the arguments the author presents by answering the following questions:

1. What type of reader does Smolin believe will enjoy this book?
2. What aspects of Green’s writing does he admire?
3. What aspects of the book does / doesn’t he like?
4. Why do you think we can trust Smolin’s opinions?

Having said all this, let me begin by noting that this is a wonderful book for the lay reader who wants to get a glimpse of what we theoretical physicists are thinking about. It is extremely well written. To prepare the reader to understand the theories that currently animate the frontiers, Greene gives an introduction to the main ideas of 20th-century physics—relativity, cosmology, quantum theory and particle physics—and he does it very well. As someone who, like Greene, has struggled—twice—with the problem of how to write a fresh and compelling book that introduces the reader to these topics, I commend him for his success here. He is a master expositor and popularizer, and these parts of the book really shine.
As you look through the paragraph, you will see a number of words that indicate the positive light in which the reviewer sees the book: ... extremely well written. ... a wonderful book. ... does it very well. ... to write a fresh and compelling book. Can you find the others? Underline them.

Let's look at another paragraph. Are the reviewer's comments still positive? What serious claim against the author does he make?

There are, however, two grounds on which I believe the book falls short: It is far too uncritical of Greene's own subject, string theory. And it offers little for the reader who remembers that science is based on experiment and who may therefore wonder how it is that all these beautiful, exciting ideas are to be tested against the harsh light of reality.

It is, then, worrying that many of the claims made in the book for string theory are exaggerated. Greene describes clearly the beautiful results that inspire hope among those who study string theory. But a presentation for the general public of a speculative and untested theory should be honest about which problems remain open. There are a number of cases in which conjectures widely believed by string theorists have remained unproven despite many years of hard work by very smart people. In several key cases Greene nevertheless presents those conjectures as facts.

In this paragraph, however, we can see that the reviewer does not agree on certain points put forward by the book's author. Here are some of the words and phrases he uses to convey his objections. Can you find the others?

The reviewer claims that Green ________________________________.

How do you think he will support this? What specific example does he cite?

For example, he clearly describes how strings, by having a finite size, suppress the quantum fluctuations of the gravitational field, perhaps leading to a consistent unification of gravity and quantum theory. As Greene explains, the result is that the theory gives finite answers, an obviously necessary condition, but one hard to satisfy. What he does not say is that the suppression has been demonstrated only in a certain low-order approximation. In fact, determined efforts by many physicists and mathematicians over a period of more than 20 years have failed to produce a proof of the finiteness or consistency of string theory. The failure has been so complete that I am aware of only two people, out of a community of more than a thousand string theorists worldwide, who are still trying to solve this problem.

Is the reviewer biased in his opinions of the way in which the information is presented by Greene? How does the reviewer's tone indicate this?

There are several other examples of the same kind of exaggeration, in which conjectures are reported as truths, and the phrase "convincingly argued" is used to imply that something is proven. This overstatement greatly weakens the value of the
book for the public. It also raises questions. Brian Greene knows that the proofs of these assertions are incomplete. At the same time, his fairness in other matters shows that he is a person of integrity. So I am sure that there is no intent here to deceive. What is happening, I suspect, is a phenomenon much more troubling. I’m afraid that it is simply inconceivable to him, as it is to many members of the string theory community, that these conjectures could be wrong.

Finally, you must always ask yourself “Who is this reviewer?” “What experience does he have in this field?” “Is there any reason I should believe his opinions?”

Who is Lee Smolin? What information, if any, was given in the text to indicate his profession?

Lee Smolin is a founding member and research physicist at the Perimeter Institute in Waterloo, Canada. He is the author of The Life of the Cosmos and Three Roads to Quantum Gravity.

Exercise 77: Distinguishing positive and negative comments

Let’s take a look at some comments made by various reviewers on different books. Can you identify the positive and the negative aspects they saw? Underline the positive points and double underline the negative ones.

1. The time is ripe for a book on the geology of Venus and Cattermole has, to use the words of Nathan Bedford Forrest, gotten there “first with the most men.” However, the forced march of a quick writing (many of the references are to material published in October 1992 and the preface is dated March, 1993), has resulted in an uneven product.

2. This book is aimed at the reader who intends to use the technology for research and commercial purposes. He has written an extraordinarily readable text, illustrated it lavishly with pictures, graphs and examples, and furnished it with problem sets, projects and general and specialized reading lists.

3. The organizational problems are especially evident in the presentation of related material, either illustrations or text, from different research papers with no critical analysis of the distinctions between them. In general, the material is not well integrated, with preMagellan research not placed in its appropriate postMagellan context.

4. Even so, so much is left out that it is hard to believe an engineer whose only knowledge of image processing is derived from this book could proceed independently on any nontrivial application. Although many mathematical techniques are mentioned, relatively few are proved rigorously, and some are merely cited without proof. In the last part in particular, a host of important topics are raced through in little, if any, depth.

5. The book gives a balanced overview of impact cratering, superficial processes, volcanism and tectonism. The material on tectonism is distributed throughout three separate, nonadjacent chapters.
6. One cannot help expressing regret that more writers in this difficult field do not have Professor Baker’s gift of clear expression combined with his soundness of judgement.

7. The description of the planet’s physiograph is excessive; much of the information could be obtained simply by looking at a map. In addition, the text reveals some significant misconceptions concerning gravity, isostasy, and heat loss and contains an above-average number of misquotations and minor errors. This is definitely a book to read with pencil in hand.

Exercise 78:  On your own

The following is a book review taken from American Scientist. While reading it, look for the answers to these questions:

1. What is the title of the book being reviewed?
2. Who’s the author?
3. What kind of readership does the reviewer think might be interested in this book?
4. Why does he believe so?
5. How is the book structured? What are the different parts?
6. What aspects of the text does the reviewer praise?
7. What aspects of the text does the reviewer criticize?
8. Does the reviewer seem to be biased in any way? If so, how?
9. What credentials does the reviewer have to make him worthy to review this book?

**On Shaky Ground**

Mark Zoback


In *Earthshaking Science*, Susan Hough, a research scientist at the U.S. Geological Survey, offers a basic primer on a range of topics related to earthquake science and engineering. Her objective is to explain current research and controversies to the lay reader—a formidable task, in which she succeeds admirably. A reader with no background in earth science or seismology can easily absorb the material presented.

Hough begins by describing the history of the theory of plate tectonics and follows with some basic information about earthquakes (how they are located, what magnitude means, and so forth). She then goes on to discuss topics that range from the prediction of ground motion (if an earthquake of expected magnitude occurs on a known fault, what factors affect how
strongly the ground will shake at a given site?) to seismic hazard analysis and, predictably enough, what she refers to as “The Holy Grail of Earthquake Prediction.”

For obvious reasons, nonexpert readers who live in earthquake-prone areas will be interested in the chapters on ground motions and the mapping of seismic hazard. Those who must accept the inevitability of earthquakes are concerned with the way in which anticipated strong ground shaking is calculated. Hough does a very good job of introducing the various factors that affect such calculations. The chapter on mapping seismic hazard is not as effective, however. Probabilistic earthquake forecasts are now the standard technique for communicating earthquake information to the public, so it is important for readers to understand the methodologies used in such analyses—paleoseismic data, earthquake recurrence models, long-term slip rates, fault segmentation and so on. These subjects are not as thoroughly discussed as they should be. Although Hough attempts at the end of the chapter to enumerate the degree of uncertainty inherent in such estimates, she hasn't explained the basic methodologies sufficiently for readers to fully understand those uncertainties.

The illustrations (black-and-white maps, crude cartoons and line drawings) are disappointing. The quality of the figures in the chapter on ground motions is particularly poor, which is surprising given the excellent information on the subject widely available on the World Wide Web and in other places.

Hough’s writing style is easy and engaging, and she makes the subject matter entertaining. Sprinkled throughout the text are sidebars on such topics as the historical rivalry between strong- and weak-motion seismologists (something most readers probably don’t need or want to know about) and the pedigree (or, more accurately, the lack thereof) of professional geophysicists. Many of these sidebars offer entertaining insights into the everyday lives of earthquake researchers. As Hough points out, those researchers are a unique breed, fascinated by fundamental scientific questions and driven by a desire to help reduce the devastation earthquakes can wreak.

Mark Zoback, Geophysics, Stanford University

http://www.americanscientist.org/template/BookReviewTypeDetail/assetid/18855
Final tips

Remember, becoming an efficient reader entails practice. So here are some final tips!

1. Use the reading strategies you have learnt. Use the **SQ3R technique**:

   **Survey**: Skim the text to make sure of its relevance and an overview of the main points.

   **Question**: Ask yourself questions that you want the text to answer.

   **Read**: Read carefully, looking for the answers to your questions.

   **Recite**: Read aloud the answers to your questions, fixing them in your mind.

   **Review**: Think about what you have learnt, organize it in your mind, link it to other information, assess its importance.

2. Look at the content, structure and purpose of the text.

   **Content**: What is the text going to be about? What is the topic? What particular aspect of the topic is covered?

   **Structure**: How is the text organized? Is it a description, argument? Does it list reasons, compare results or explain the steps of a process?

   **Purpose**: Ask yourself “What do I need to know after reading this? What will I be expected to know? What should I remember?”

3. Activate your schemata, make predictions while you read, try to picture and develop images while you read the text. Relate your prior knowledge to the new information you are obtaining. Monitor your understanding of the text, re-read
parts that may be difficult or confusing. Use the strategies you have been taught.

4. After reading the text, recall what you have read. Talk to yourself and test your understanding. Use metal maps, graphic organizers or write a summary of what you learnt. Evaluate the new material; ask yourself “What have I learnt from this text?” “How has it changed or strengthened my view on this topic?”

You are on your way to becoming a GOOD READER
References


Apéndice: “¡No entiendo lo que leo en inglés!”

Aprender vocabulario en inglés

Numerosos investigadores han demostrado que el conocimiento insuficiente de vocabulario impide la comprensión de textos auténticos en una segunda lengua. Además, hemos podido determinar que, por lo general, los estudiantes que comienzan el Programa de Inglés de Primer Año del Departamento de Idiomas en la USB no poseen el conocimiento de vocabulario necesario para comprender de manera satisfactoria los textos contenidos en las guías de la asignatura “Inglés Técnico y Científico”. Es por ello que consideramos que es imprescindible que los estudiantes emprendan, de manera autónoma e inmediata, una serie de medidas correctivas en lo que respecta a esta carencia de vocabulario en inglés, puesto que esa deficiencia podría afectar seriamente su rendimiento en esta asignatura.

Es obvio que no todas las palabras tienen la misma utilidad para los estudiantes, entonces ¿qué palabras se deben aprender primero? Para que el aprendizaje de vocabulario en inglés sea lo más eficiente posible, es preciso comenzar por memorizar las palabras de más alta frecuencia. Se han recopilado unas listas de palabras seleccionadas de acuerdo a su frecuencia de aparición en textos escritos en inglés, las cuales tienen el potencial de suministrar al estudiante el conocimiento mínimo necesario para leer con comodidad textos de carácter técnico y científico en ese idioma. En la próxima sección se encuentra un glosario inglés-español que contiene cerca de 1100 palabras en inglés acompañadas de sus
significados más frecuentes en español (dentro del ámbito técnico-científico), las cuales constituyen una selección de las palabras que consideramos más útiles para cumplir con el propósito de alcanzar el conocimiento de vocabulario indispensable para tener éxito en la adquisición de destrezas de comprensión de lectura en inglés.

Indiscutiblemente, no todos poseemos el mismo conocimiento de vocabulario en inglés. Así que el primer paso que se sugiere es determinar cuáles de las palabras que aparecen en el glosario a continuación nos son conocidas y cuáles nos resultan desconocidas. Para ello, se recomienda utilizar una hoja de papel para ocultar la columna de la traducción al español antes de comenzar a revisar la lista de palabras en inglés. Primero, el estudiante debe leer una palabra en inglés y tratar de recordar su equivalente en español. Si cree recordar su traducción, debe verificar la columna de significados. Si recordó correctamente el equivalente en español, pasa a la siguiente palabra. Si el estudiante no lo recuerda, debe colocar una marca al lado de la palabra desconocida y continuar revisando la lista. Una vez revisadas todas las palabras del glosario, el estudiante habrá marcado un número determinado de palabras desconocidas en inglés, las cuales constituyen la sub-lista de palabras que debe aprenderse. La tercera sección de este apéndice ofrece recomendaciones sobre cómo memorizar el significado en español de esa sub-lista de palabras desconocidas en inglés.

Listas de Vocabulario

Las listas de vocabulario que encontrará a continuación se componen de palabras provenientes de la General Service List (West, 1953) —la cual contiene las 2000 palabras más frecuentes en inglés— y la Academic Word List (Coxhead, 2000) —compuesta por las 570 familias de palabras que aparecen con mayor frecuencia en los textos de carácter académico en inglés. A las listas anteriormente mencionadas se les han eliminado las unidades gramaticales como pronombres, conjunciones, preposiciones, artículos, etc.; los verbos auxiliares y los adverbios. También se han dejado fuera de las listas la mayoría de los cognados transparentes del español, aquellas palabras que componen el vocabulario propio del inglés de bachillerato, y las palabras que —a pesar de ser frecuentes en inglés— tengan una frecuencia relativamente baja en textos de carácter técnico-científico.

Podrá observar que las palabras en inglés se presentan en orden alfabético y acompañadas de su traducción más frecuente al español dentro del ámbito técnico-científico. Este glosario inglés-español está separado en tres sub-listas: (1) 1-1000 Word List, con 513 palabras; (2) 1001-2000 Word List, con 351 palabras; y, (3) Academic Word List, con 217 palabras. Esperamos que sean de utilidad.

La versión electrónica completa de estas listas de vocabulario está disponible en http://tinyurl.com/2ev85x2
# 1-1000 Word List

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young    joven

1001 – 2000 Word List
advertise    hacer propaganda
advice       consejo, aconsejar
afford       costear
afraid       con miedo
aim          objetivo, apuntar
alive        vivo
angle        ángulo
annoy        molestar
approval     aprobación
approve      aprobar
arch         arco
argue        discutir
arrangement  arreglo
arrow        flecha
ash          ceniza
attend       asistir, estar presente
avoid        evitar
awkward      inapropiado, extraño
bag          bolsa
bare         descubierto
barrel       barril
beam         rayo, viga
behave       comportarse
behavior     conducta
bend         doblar
bind         atar
bit          pedazo
blade        hojilla
block        bloque, bloquear
boil         hervir
bold         audaz
bone         hueso
border       borde
borrow       pedir prestado
bottle       botella
bottom       fondo
bound        limitar
boundary     frontera
brick        ladrillo
brush        cepillo
busy         ocupado
button       botón
cap          tapa
card         tarjeta, ficha
caution      precaución
chain        cadena, encadenar
cheap        barato
clean        limpio, limpiar
course       rugoso, burdo
collect      recolectar
complain     quejarse
confidence   confiarse
confident    confiante
conscious    consciente
cool         fresco
corner       esquina
crack        grieta, agrietar
crash        chocar
crush        triturar
damage       daño, dañar
damp         húmedo
dare         atreverse
decay        decaer
decrease     disminuir
delay        retraso, retrasar
deliver      enviar
delivery     entrega
deserve      merecer
dirt         suciedad
dirty        sucio
discuss      discutir
disturb      molestar
dot          punto
earn         ganar
edge         borde
empty        vacío, vaciar
enclose      incluir
encourage    estimular
engine       motor
entire       entero, completo
fault        falta
faulty       con errores
fold         doblar
frame        marco
freeze       congelar
guard        guardia, proteger
guess        suponer:
guide        guía, guiar
hammer       martillo, martillar
handle       manilla
harm         daño, dañar
harmful      dañino
harmless     inofensivo
height       altura
hesitate     dudar
hide         esconder
hinder       impedir
hit          golpear
hollow       hueco, vacío
hook         gancho, enganchar
scent
screen
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seize
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sharp
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shock
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skillful
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slip
slow
smell
smoke
smooth
soap
soil
solve
sour
spare
spill
spin
split
spoil
staff
stain
stamp
steady
steal
steam
steep
steer
stem
stick
stiff
sting
stir
ugly  feo  acquire  adquirir, comprar
uncomfortable  incómodo  adequate  adecuado
upper  superior, de arriba  adjust  ajustar
upright  derecho, vertical  advocate  defender
upset  molesto, molestar  aid  ayuda, ayudar
urge  exhortar  allocate  colocar, asignar
waist  cintura  alter  alterar
wake  despertar  amend  corregir
wander  caminar sin rumbo  append  anexar
warm  tibio  approach  enfoque, acercarse
warmth  calor, calidez  assemble  ensamblar
warn  advertir  assess  evaluar
wash  lavar  assign  asignar, encargar
waste  desperdicio, desperdiciar  assist  ayudar
wasteful  derrochador  assure  asegurar
wax  cera, encerar  attach  añadir, pegar
weak  débil  attain  lograr, alcanzar
weaken  debilitar  automate  automatizar
weakness  debilidad  available  disponible
weapon  arma  aware  consciente
weather  clima  benefit  beneficio
weave  tejer  bias  sesgo, parcialidad
weed  hierba  bond  vínculo, unión
weigh  pesar  brief  breve
weight  peso  bulk  volumen
wet  mojado, mojar  capable  capaz
wheat  trigo  cease  cesar, terminar
wheel  rueda  challenge  reto
whisper  susurro, susurrar  channel  canal, canalizar
wine  vino  chapter  capítulo
wing  ala  chart  diagrama
wipe  limpiar frotando  chemical  químico (a)
wire  alambre  code  código
wireless  inalámbrico  collapse  colapsar
witness  testigo  commodity  artículo de consumo
wool  lana  compile  recopilar
worm  gusano  complex  complejo
worry  preocuparse  compound  compuesto
worse  peor  comprehensive  amplio
worst  el peor de todos  comprise  incluir
wrap  envolver  conceive  concebir
wrist  muñeca (mano)  conclude  concluir
yard  yarda  conduct  conducir
Academic Word List
accompany  acompañar
accumulate  acumular
accurate  exacto, preciso
achieve  lograr
acknowledge  reconocer
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El computador manual de Leitner

El computador manual de Leitner es un dispositivo de baja tecnología diseñado para la memorización autónoma y acelerada de grandes cantidades de vocabulario en una segunda lengua. En su forma más simple, consiste en una caja de zapatos con una serie de compartimientos internos colocados a intervalos pre-establecidos (1, 2, 5, 8 y 14 cms). El estudiante "carga" el computador con una serie de fichas de vocabulario. Para obtener resultados óptimos, se recomienda el uso del computador a diario durante quince minutos, o de tres a cuatro veces por semana durante no más de media hora.

Procedimientos para la utilización del computador manual de Leitner

1. Cada palabra a memorizar se escribe en una ficha —la palabra en inglés por un lado, y su traducción al español por el otro. Se recomienda utilizar siempre el mismo color para todas las palabras en inglés, y otro color diferente para todas las palabras en español. El propósito es que quede inmediatamente claro que el frente de la ficha corresponde a la palabra en inglés que se intenta memorizar y el revés corresponde a su equivalente en español.

2. Las fichas se colocan en el compartimiento 1 (de 30 a 40 fichas a la vez). Se procede a revisar las palabras de este compartimento sacando ficha por ficha.
3. El estudiante lee la palabra en inglés y trata de recordar su equivalente en español. Si cree recordarlo, la voltea para verificar. Si recordó correctamente, coloca la ficha en el compartimiento 2.

4. Si el estudiante no recuerda el equivalente en español, debe repetir la palabra tanto en inglés como en español dos o tres veces. Luego, debe colocar la ficha en la parte de atrás del compartimiento 1.

5. Cuando quedan sólo de tres a cinco fichas en el compartimiento 1, el compartimento debe rellenarse con de 30 a 40 nuevas fichas. De esa forma, se pueden aprender nuevas palabras.

6. Después de haber repetido los pasos anteriores varias veces, el compartimiento 2 también se llena. Entonces, es hora de revisar las palabras que allí se encuentran. Al revisarlas, aquellas palabras que el estudiante recuerda pasan al compartimiento 3, aquellas que no recuerda se colocan en la parte posterior del compartimiento 1. La revisión continúa hasta que se desocupe por completo el contenido del compartimiento 2.

7. El principio del uso del computador manual queda así establecido:

   ...un compartimento se revisa sólo cuando está completamente lleno, todas las palabras que el estudiante “se sabe” pasan al compartimiento siguiente, las palabras que el estudiante “no se sabe” o que “ya no recuerda” deben regresar a la parte posterior del compartimiento 1.

8. Después de cierto tiempo, los compartimentos 3 y 4 también llegan a llenarse. En ese caso, se procede de la misma manera que cuando se llenó el compartimiento 2. Es importante que el estudiante recuerde que sólo se revisa el contenido de un compartimiento cuando éste esté completamente lleno.

9. Eventualmente, cuando el compartimiento 5 también esté lleno, el estudiante revisará esas fichas por última vez. Si se sabe las palabras que allí se encuentran (lo cual es lo más probable) debe guardarlas en otro lugar, fuera del computador. De esa manera, se hace espacio para seguir cargando el computador con nuevas palabras desconocidas. Para el momento en que el compartimiento 5 se ha llenado, el estudiante ha revisado esas palabras con una frecuencia tal (distribuida en el tiempo) que podemos hablar de verdadero aprendizaje.

10. De vez en cuando, es recomendable tomar una muestra de diez palabras de ese grupo de fichas que se sacó del computador, con el objeto de verificar si todavía se recuerdan.

Finalmente, una vez que las palabras desconocidas que el estudiante escogió del glosario han “pasado” por el computador y las ha aprendido, puede seguir cargando el computador con otras palabras desconocidas que encuentre en sus lecturas. Sin embargo, es conveniente que el estudiante esté consciente de que este dispositivo le será muy útil sólo mientras sea un principiante. A medida que el uso sistemático del computador rinda sus frutos, y por ende su conocimiento de
vocabulary en inglés aumente, perderá interés en el dispositivo puesto que ya no le será necesario, y comprenderá los textos en inglés de tal manera que comenzará a determinar el significado del vocabulario desconocido a través de otros mecanismos, como por ejemplo, la inferencia a través del contexto.

Texto sobre el aprendizaje de vocabulario en inglés preparado por la profesora Noela Cartaya.

Listas de vocabulario adaptadas de Cobas (2003) por la profesora Rubena St. Louis con la utilización del Web Vocabulary Profiler (Cobb, n/d.). Introducción y edición a cargo de la profesora Noela Cartaya.

Texto sobre el computador manual de Leitner adaptado por las profesoras Noela Cartaya y Silvia Pereira del original de Mondria y Mondria-De Vries (1994) y de su traducción al español realizada por la profesora Genoveva Llinares.

Sartenejas, septiembre de 2009