Descriptive Process

You have already learned that your purpose for writing determines your subject and the way you arrange your information. In Chapter 7, we will examine the pattern of organization used when your purpose is describing the sequence of steps in a procedure. However, first let’s look at the two types of process essays, prescriptive and descriptive.

The prescriptive process essay explains how to do something. This type of essay is useful when scientists, in their published research, must describe how they conducted their experiments. Health sciences writers often choose this type of essay when they must write instructions, e.g. how to administer CPR.

The Heimlich maneuver is administered in three steps. Standing behind the victim, the rescuer wraps his arms around the victim’s waist. Then, the rescuer makes a fist, which is placed between the victim’s navel and rib cage. The rescuer then grasps his fist with his other hand and quickly presses in with a forceful upward thrust. If this movement does not dislodge the foreign object, the rescuer repeats the maneuver.

In some scientific writing and, more commonly, in popular literature, authors use imperative verbs rather than nouns or third person pronouns as subjects when they write a prescriptive process piece.

Administer the Heimlich maneuver in three steps. Standing behind the victim, wrap your arms around the victim’s waist. Then, make a fist, which is placed between the victim’s navel and rib cage. Next, grasp your fist with your other hand and quickly press in with a forceful upward thrust. If this movement does not dislodge the foreign object, repeat the maneuver.

Unlike the prescriptive process, the descriptive process essay explains how something occurs. This type of essay is especially important in scientific writing. For example, it is used to describe biological processes such as metamorphosis and chemical processes such as the interaction of drugs. It does not use imperatives.
The pupal stage is the second stage of the process of metamorphosis. Caterpillars pupate by forming blue/green shells around themselves. This protects them during their period of development; thus, they become pupae. The pupae attach and hang upside down from twigs. The pupae are immotile and, thus, cannot fight off intruders; fortunately, the shells act as shields. A cocoon of silk is formed around the bodies of the pupae, providing further protection and preventing the pupae from drying out. Development proceeds as organs and structures form. The tissues of the pupae break down into a liquid, and butterfly structures begin to take form. After the structures form, the pupae grow even larger.

Although both prescriptive and descriptive processes are important in scientific writing, we will focus on the descriptive process essay. You will first learn about the organizational pattern and the language of the process essay. Afterwards, you will practice writing your own essay based on information presented through reading and listening exercises contained in this chapter or information contained in the appendix.

### Organizational Pattern

The descriptive process essay uses a basic pattern of organization. Not only will knowledge of this pattern aid you when you write your own essays, but also it will help you recognize key information whenever you listen to lectures or read articles about a process.

<table>
<thead>
<tr>
<th>INTRODUCTION</th>
<th>BODY</th>
<th>CONCLUSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. State the process and why it is important.</td>
<td>1. Using time order, describe what happens during each step in the process.</td>
<td>1. Paraphrase the thesis.</td>
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<tr>
<td>2. Provide general background information on the process.</td>
<td>2. If there are a lot of steps, group them into several main categories.</td>
<td>2. Summarize the main steps in the process.</td>
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<td>3. Define the process.</td>
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<td>3. Review why the process is important.</td>
</tr>
<tr>
<td>4. State the thesis.</td>
<td></td>
<td></td>
</tr>
</tbody>
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**Directions:** The sample essay by student Ala’a Ahmed Salem Abughefreh on the next page follows the descriptive process organizational pattern. After reading the essay, answer the questions that follow it.
The Process of DNA Replication

The process of DNA replication plays a crucial role in providing genetic continuity from one generation to the next. Knowledge of the structure of DNA began with the discovery of nucleic acids in 1869. In 1952, an accurate model of the DNA molecule was presented, thanks to the work of Rosalind Franklin, James Watson, and Francis Crick. To reproduce, a cell must copy and transmit its genetic information (DNA) to all of its progeny. To do so, DNA replicates following the process of semi-conservative replication. Two strands of DNA are obtained from one, having produced two daughter molecules that are identical to one another and to the parent molecule. This essay reviews the three stages of DNA replication process necessary for genetic inheritance and existence, namely, unwinding, complementary base pairing and joining.

The first stage of the process is the unwinding of old strands of the parent DNA molecule. The two strands of the double helix are first separated by enzymes. Then, each strand acts as a template for the synthesis of a new complementary DNA molecule. Proteins play a major role in this stage. The stability of the replication fork is maintained by the single-stranded binding proteins. Moreover, there are many enzymes that participate in the unwinding of the old strands of DNA molecule.
such as topoisomerase. This enzyme is responsible for initiation of the unwinding of the old strands of DNA molecule. Once supercoiling has been eliminated by the topoisomerase, helicase accomplishes unwinding of the original double strand. In order to aid with the unwinding process, DNA gyrase catalyzes the formation of negative supercoils. The unwound helix, with each strand being synthesized into a new double helix, is called the replication fork.

The second stage of the process is complementary base pairing. This stage, as well as the third stage, is carried out by the enzyme complex DNA polymerase. In this stage, new complementary nucleotides are positioned following the rules of complementary base pairing: adenine (A) to thymine (T) and guanine (G) to cytosine (C). However, DNA polymerase cannot start synthesizing on a bare single strand.

Consequently, DNA polymerase uses a primer with a 3’OH group onto which it attaches deoxy-nucleotide-triphosphates (dNTP’s) to prepare for hydrogen bonding with their appropriate complementary dNTP on the single strand. Without this primer, the binding of free nucleotide with
complementary bases could not be catalyzed by the DNA polymerase.

The last stage of the process, joining, involves bonding of complementary nucleotide to each other so as to form new strands. The nucleotides are joined to one another by hydrogen bonds to form a new DNA molecule. This joining continues until a new polynucleotide chain has been formed alongside the old one, forming a new double-helix molecule. This stage of the process also takes place with the assistance of enzymes. The DNA polymerase links the complementary nucleotides together, forming the side rail of the new DNA molecule. In addition, the final replication product has no nicks because of the action of DNA ligase.

In conclusion, DNA replication is a three-stage process. Unwinding, complementary base pairing and joining form the basis of the process of DNA replication. DNA polymerase plays an important role in this process. This process is crucial for ensuring continuous transmission of the genetic information through generations.

Questions
1. What is the process being described?
2. Which verb tense does the author use to describe the process?
3. How do you know when the author moves from one step to the next?
4. Explanation of the process follows what order?

**Outline**  
**Directions:** Fill in the outline based on the information contained in the sample essay.

I. Introduction  
A. General statement introducing topic and importance of topic  
B. Background information  
   1.  
   2.  
C. Definition of the process  
D. Thesis statement  
   1. Topic  
   2. Purpose  
   3. Pattern of organization, i.e. number and organization of main points

II. First main point  
A. Major support  
B. Major support  
   1. Minor support  
   2. Minor support

III. Second main point  
A. Major support  
B. Major support

IV. Third main point  
A. Major support  
B. Major support  
C. Major support

V. Conclusion  
A. Restatement of thesis  
B. Summary of main points  
C. Review of importance of process

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