



Paragraphs

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Paragraphs

- Paragraph Unity
- Paragraph Coherence
- Paragraph Development



Paragraph Unity

- Unify paragraphs by making every sentence contribute to a controlling idea, which is usually stated in a topic sentence.
- Example: controlling idea underlined

The latest electronic innovation, still under development, is called "adaptive optics." Adaptive optics is an electronic feedback mechanism capable of correcting for the distorting effects of the earth's atmosphere and thus allowing much sharper images of astronomical objects. The earth's atmosphere is constantly shimmering, because of moving pockets of air and changes in temperature, and such shimmering causes passing light rays to bend one way then another. In effect, the shifting atmosphere acts as a rapidly changing lens, smearing out and defocusing images. In adaptive optics, motorized cushions are placed behind the telescope's secondary mirror and constantly reshape the mirror's surface to counteract the defocusing effect of the atmosphere. The cushions are given instructions by a computer, which analyzes the image of a "guide star" in the same field of view as whatever the telescope is looking at. With no atmospheric distortion, the image of a star should be a single point of light. By analyzing how the actual image of the guide star differs from a point, the computer can infer the distortion of the atmosphere and tell the cushions how to alter the mirror to bring the guide star, and all the objects near it, back into sharp focus. Corrections must be made rapidly, because the atmosphere is rapidly shifting. In practice, the computer will analyze the image of a guide star and give new instructions to the reshaping cushions every 0.01 to 0.1 seconds.



Paragraph Coherence

- A coherent paragraph does more than simply lay down the facts.
- It organizes them, creating a logical argument that makes sense from idea to idea. Coherent paragraphs have a beginning, a middle, and an end.



Example

- Weak

Limited investment in the housing sector makes it practically impossible to allocate sufficient resources for urban dwellers' housing needs. A high rate of urban population growth has increased the country's needs for housing. A small group of city officials has laid out a new plan to combat the crisis. A solution to the housing-shortage problem is a vital policy issue here. The housing problem has grown in the last twenty years.

[Although related by topic (housing shortage), each sentence makes its own separate point with no link to the sentences before or after. The result is a group of related yet separate ideas instead of one coherent paragraph.]

- Improved

Limited investment in the housing sector makes it practically impossible to allocate sufficient resources for urban dwellers' housing needs. In fact, the problem has grown in the last twenty years. Because a high rate of urban population growth has increased the country's needs for housing, a solution to the housing-shortage problem is a vital policy issue here. A small group of city officials has laid out a new plan to combat the crisis. **[Each separate fact now flows into the next, creating a coherent whole.]**



Paragraph Development

- Develop paragraphs in a variety of patterns that reflect your thinking about the material.
- As you write the topic sentence and its supporting sentences, look for ways to structure your thinking.
- Modes of paragraph development:

Exemplification , Narration , Process ,
Description , Comparison and contrast
Analogy , Cause and effect
Classification and division
Definition , Analysis , Enumeration



Exemplification

- exemplification paragraphs to provide instances that clarify your topic statement

Vitamins and minerals can be added to enrich (replace nutrients lost in processing) or fortify (add nutrients not normally present) foods to improve their nutritional quality. Breads and cereals are usually enriched with some B vitamins and iron. Common examples of fortification include the addition of vitamin D to milk, vitamin A to margarine, vitamin C to fruit drinks, calcium to orange juice, and iodide to table salt.



Narration

- Use narration to establish a series of events that tells the reader what happened.
- Narration follows a chronological pattern of development.
- It is a convincing mode of paragraph development to the extent that it tells a coherent story. This pattern or time line is usually very easy to understand.



Narration example

The carbon feasibility studies were completed in October, 1978. Immediately thereafter, the U.S. Environmental Protection Agency (EPA) "Blue Magoo" was dispatched to the site to provide on-site emergency treatment. First, wastewater generated during construction was collected, pH adjusted, clarified, sand filtered, and carbon treated. Next, treated effluent was analyzed and was found to confirm Calgon's study findings. After this process, the New York State Department of Environmental Conservation granted a discharge permit on October 27, 1978. On October 29, 1978, the EPA Emergency Treatment System was replaced by a larger system provided by Newco Chemical Waste Systems, Inc. and Calgon Corp . . .

The two-stage adsorption system, providing ongoing treatment at the Love Canal site, is a skid-mounted system designed for rapid installation. The adsorbers are pressure vessels complete with all process and carbon transfer piping, valving, and instrumentation. Each adsorber holds a full truckload of 9,072 kg (20,000 lb) of granular carbon and can hydraulically process up to 662 l/min (175 gal) of wastewater. When a carbon bed is spent, the spent carbon is pneumatically and hydraulically transferred to . . .



Process

- Use process in paragraphs to develop sequences that describe how an action is carried out or how something works.
- Example

Ideally, an image should contain a region of high-intensity pixels that form the target, and a low-intensity background. To find the target region, the algorithm first samples the images in overlapping windows and sums the pixel intensities contained in each window. The window with the highest sum is assumed to contain the target, and the average of the remaining windows is assumed to be indicative of the background level. Thus, subtracting the average of the window sums from the highest window sum provides a measure of the target strength over the background noise level. If an image does not contain a target, then the different between the highest sum and the average sum will be very small. The difference will also be small for images containing faint targets and high levels of background noise.



Description

- Use descriptive prose to provide a physical picture or a functional view of the subject. Physical description develops a picture by identifying the shapes, materials, position, and functions of its subject.
- Example

The test section (0.86 m × 2.44 m) of the boundary layer tunnel, as shown in Figure 2, is situated between the nozzle and the diffuser. It consists of a flat aluminum test plate, a contoured wall, and two transparent side walls. A bleed-scoop layer at the leading edge of the test plate removes the inlet boundary layer. The contoured wall opposite the test plate generates the required pressure distribution. The two differently-contoured walls used in this investigation generate either squared-off pressure distribution or aft-loaded pressure distribution.



Comparison and Contrast

- Use comparison and contrast to develop a topic by examining its similarities or dissimilarities to another thing, process, or state.
- Comparison emphasizes the similarities, contrast the differences.
- A paragraph may use both comparison and contrast.



Comparison and Contrast

- Example

Coaxial vs. Fiber-Optic Cable: Comparative Cable-Length Performances

For a number of critical performance characteristics, fiber-optic cable offers considerable advantages over standard coaxial cables. The most obvious distinction between the two is the great bandwidth-distance capacity of fibers. The high-frequency capacity of coaxial cables decreases rapidly with increased length, but the bandwidth of a commercial fiber-optic system will remain constant with length. A commercial fiber-optic system like that of Artel, as shown in Figure 3, remains constant for a bandwidth over a distance of 4,000 ft, while three different sizes of coaxial cable rapidly drop in less than half the distance.

For RG-179 coax, a $1,024 \times 1,024$ signal is limited to 50 ft; RG-59 rolls off 3 dB at 170 ft. Larger, bulkier cables such as RG-11 can reach up to 250 ft, but are impractical to install, since three such cables are required for RGB color. Fiber-optic cable, on the other hand, allows transmission of more than 60 MHz video clock over a mile, and 20 MHz over $2\frac{1}{2}$ miles, with no repeaters or equalizers.

Noise interference is another important area in which performance differs greatly. Coaxial cables are susceptible to induced interference (EMI/RFI) from such noise generators as fluorescent lights, computers, power cables, industrial equipment, and even other communications cables. Cable frequency equalization further aggravates this noise problem. Fiber-optic cable is, in contrast, immune to all forms of EMI, RFI, and crosstalk.