

ESSAY WRITING

EMBEDDED COMMUNICATING ENGINEERING

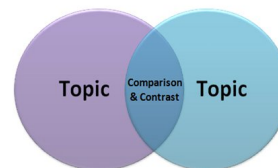
WORKSHOP 3 *for* COMPUTER ENGINEERING (EPP1)

COMPARE-CONTRAST ESSAY

CENTRE FOR ENGLISH LANGUAGE COMMUNICATION
NATIONAL UNIVERSITY OF SINGAPORE



Compare-Contrast Essays



1. PURPOSE

Compare and contrast essay: an essay that takes two topics and shows how they are alike and how they are different. As a writer, you **compare** things to show **similarities**, and **contrast** things to show their **differences**. Once this is done, the next step should be to evaluate effectiveness or efficiency.

In such an essay, you use comparison and contrast to describe things, to define things, to analyse things, to make an argument -- to do, in fact, almost any kind of writing. In a comparison/contrast essay, a writer must do the following:

1. Identify and explain three or more key points that two or more subjects have in common.
2. Show the similarities and differences between the subjects with regard to these points.
3. Develop a thesis, indicating his or her position regarding the two subjects.

2. ELEMENTS OF ESSAY

1. Identify and explain three or more **key points** that two or more subjects have in common. These key points can serve as the criteria used in the comparison.
2. Show the **similarities and differences** between the subjects with regard to these points. Cite all sources using the IEEE style. (Refer to the IEEE Folder.)
3. Evaluate the **strengths and weaknesses** of comparisons based on evidence: Use case studies/statistics/data/ illustrations/theories/ principles to support the explanations. Consider applications and implications.
4. Develop a **thesis**: develop own position based on your evaluation. The thesis may indicate:
 - that one concept is stronger than the other and that both subjects have strengths,
 - that both subjects possess noteworthy flaws though both have flaws, or
 - the applications and implications of your claim.

5. Language: Useful phrases to use:

5.1. The following words or short phrases **compare two items or ideas**:

similarly / like / likewise / same as / as well as / also / too / both / are alike

5.2. The following words or short phrases **contrast two items or ideas**:

however / unlike / in contrast to / as opposed to / different from / whereas / compared to

5.3. Use subordinating conjunctions, connecting words and prepositions to **contrast positive and negative aspects**, and to **evaluate ideas**:

though / although / even though / however / nonetheless / despite / in spite of

3. STRUCTURING INFORMATION IN THE ESSAY

3.1 Standard structure

A compare and contrast essay has the standard structure which includes:

1. **Title**

2. **Introduction:** In the introduction, the writer provides the reader with brief general information on the topics under comparison and contrast. At the end of the introduction the writer makes a thesis statement. A thesis statement is a sentence in which the writer states the point of view he wants and will prove in the body of the essay referring to the analyzed subjects.

3. **Body paragraphs:** The body structure may have several variants depending on how the writer wants to arrange the compare and contrast arguments, and evaluate the differences to perhaps suggest which idea/concept/assumption/principle/theory/framework/model is more effective or efficient based on set criteria. See Section 3.2 below.

4. **Conclusion:** The conclusion provides a brief summary of the issues analysed in the body and it may highlight the arguments which are needed by the writer to support a point of view. In other words, the conclusion has to prove the thesis statement which is declared in the last sentence of the introduction. In such a way the compare and contrast essay becomes complete.

3.2 Organisation of the body paragraphs

Two methods for writing a comparison essay are the **block** and the **feature-by-feature** methods. Read the following information about each format and choose either for your comparison essay.

(a) **Block Arrangement: Discuss all similarities before discussing all differences.**

Thesis Statement: There are two main differences / similarities between a PC and a Mac in terms of software and ease of use

1st Body paragraph: PC

1. Software
2. Ease of use

2nd Body paragraph: Mac

1. Software
2. Ease of use

(b) **Feature-by-feature: Discuss one pair of similarity and difference, then discuss the next pair of similarity and difference.**

Thesis Statement: There are two main differences / similarities between a PC and Mac in terms of software and ease of use.

1st Body paragraph: software

1. PC
2. Mac

2nd Body paragraph: MAC

1. PC
2. Mac

Example of Compare/Contrast essay with Block arrangement

Comparison and contrast nuclear energy and solar energy

Human beings have been using fossil fuels for hundreds of years, satisfying the demand of industrialization. Unfortunately, the behavior of using fossil fuels causes huge pollution, such as soil, water and atmosphere contamination. In addition, fossil fuels are facing exhaustion. It is evident that the situation needs to be checked. Nuclear and solar energy are two clean, practicable solutions for human beings because they have been tested and put to use since the mid twentieth century. On the surface, nuclear and solar energy seem completely different in aspects other than low direct pollution and practicability. In fact, they share some significant similarities while they are totally different in other aspects. This essay will concentrate on comparing and contrasting nuclear and solar energy by discussing the similarities in gas emissions, low efficiency and high costs, as well as the differences in safety and equipment. [Thesis statement]

There are numerous similarities between nuclear and solar energy. The most significant one is that they are pollution-free and have no direct emission of carbon dioxide or other greenhouse gases. Both nuclear and solar energy will give a carbon dioxide savings of 1330 kg for 1 kw electric power per year (Bosshard, 2006). Even though they lead to indirect emission of gases, the quantity of pollutants is small and unavoidable. [1st similarity – low emission of greenhouse gases]

However, at the price of low emission, the improvement of efficiency is expensive and difficult for both. In other words, they require high expenses in material and maintenance, especially when increasing electricity production. According to Bosshard (2006) and Murray (2000), low efficiency has always been a challenge for nuclear energy as much as it is in the solar energy field. A nuclear plant has efficiency of about 7% in collecting radioactive energy to drive dynamotors. Merely 30-40% energy can be converted into electricity power by dynamotors. Likewise, neither silicon solar cell nor compound solar cell has an average efficiency which is over 16% (Edmonds, 2007). Even though both nuclear and solar energy have plans for increase of efficiency – fusion for nuclear energy and Thin Film Poly for solar energy –, these techniques are unlikely to be in operation within the decade. [2nd similarity – low efficiency]

Another common feature that these two kinds of energy share is the price of electricity. According to Thamm (2007), the price for solar energy is \$0.35-\$0.6 per kWh for solar cell and \$0.085-\$0.135 per kWh for solar thermal, while Fell (2006) claimed that the nuclear electricity price was from \$0.3 to \$0.6 per kWh. Comparing this to the cost of fossil fuels energy, which is merely \$0.04 per kWh; hence, it is obvious that the high costs of these two forms of energy will cause them to be less desirable. [3rd similarity – high cost]

Their similarities end here. A main difference between them is safety. It is the cause for the disparity in worldwide fund input and popularity between nuclear and solar energy. According to Duncan (2002), radioactive materials are regarded as the most basic sources for nuclear plants, and they can also be extremely deadly pollutants. Therefore, as a solution, these materials have to be stored deep in the earth with high-end and mature technology. Nuclear energy becomes one of the luxury goods for some wealthy countries. In contrast, solar energy application is much safer, as solar cells can not only be built in solar stations but also be applied in every aspect of daily life in both developed and developing countries. For instance, solar cells supply energy to homes or even playthings. Furthermore, the two famous nuclear accidents, on the Three Mile Island in 1979 and in Chernobyl in 1986, are regarded as another main reason for environmentalists to refuse nuclear power and for many countries to prefer putting more funds into other clean energy like solar energy. [1st difference - safety]

There are three differences in the equipment used to generate electricity for these two kinds of energy. The main difference involves the principle of operation of energy transformation. In this area, solar energy is more direct. Gonyeau (2003) stated that nuclear plants used some special substance to absorb the radioactive energy from radioactive material in order to convert the energy into the heat of vapor, which would drive the thermoelectric generator to produce electricity. Moreover, heavy water, which is so difficult to produce that

its value is higher than gold, is required as refrigerant. In contrast, solar equipment can generate electricity more directly by collecting photon energy and transforming it into potential energy in the cell or just gather the heat of light with water or parabolic dish collector (Corporation, 2008). As a result, solar energy is more convenient than nuclear energy. The second difference lies in security. Nuclear plants need frequent monitoring and have to be well protected, because every little mistake can lead to overheating of the reactors, which is likely to cause irreparable environmental damage. However, solar equipment is easier to control and does not require as much care as nuclear plants do. The last point of difference is in energy gathering. Nuclear plants can generate hundreds of times electricity more than solar equipment (Edmonds, 2007). [2nd difference – equipment]

From what has been discussed above, it is easy to see that solar energy is more promising than nuclear energy for its pollution-free production, safety, and convenience. Also, while nuclear energy is much more dangerous, solar energy has wider applications in all aspects of society. Moreover, solar energy can be said to have an infinite source, and can be found even outside the solar system, whereas nuclear energy sources may be depleted in future. [3rd difference - sustainability]

In conclusion, by comparing and contrasting these two kinds of energy, it is clear that nuclear and solar energy share the common points of having low greenhouse gas emissions and high costs. However, they differ in many areas such as safety and principle of operation of devices. It is evident that the application of nuclear and solar energy will grow in the future, though solar energy seems more promising. Although there are several challenges for both nuclear and solar energy to conquer, progress will be made with advances in technology. Consequently, they will serve human beings and satisfy the increasing energy demands.

References have been omitted.

Adapted from sample student essay retrieved from:

<https://www.ukessays.com/essays/engineering/comparison-and-contrast-between-nuclear-and-solar-energy-engineering-essay.php>

Legend for annotations:

Blue text: similarities

Green text: differences

[Red text]: comments

Yellow highlight: Words and phrases that signal similarities

Blue highlight: Words and phrases that signal differences

Example of Compare/Contrast essay with Feature-by-Feature arrangement

Can you easily identify the similarities and differences in this essay? What about the thesis statement? Are the main elements clearly signalled?

Adobe Photoshop vs. Adobe Illustrator

The 21st century is the age of visual information. Wherever you look, you will be surrounded by all kinds of graphics, charts, commercials, logos, banners, and other images. Be it a website, a billboard, a magazine, a comic book, a package—all the images are created by graphic designers: people whose profession is to draw. Unlike usual artists, graphic designers mostly work with customers, creating images based on their specific requirements; there is also one more difference: instead of a canvas, pencils, and dyes, graphic designers utilize special software programs. Among the most popular and the most advanced programs, Adobe Photoshop and Adobe Illustrator are the favorites of the majority of graphic designers. Many people who want to learn any of these pieces of software from scratch face the most basic question: which program to start studying with, and what are the differences between Photoshop and Illustrator?

The most basic difference probably lies in the principles each of these programs operates with. Photoshop works with raster graphics. A raster image consists of pixels, each emitting the light of three main colors: red, green, and blue (the so-called RGB standard). The mixture of these three colors provides all the range of colors our monitors can display. When all the pixels in a certain area of a screen shine at their maximum capacity, this area will appear white; less intensity gives darker shades, up to black. The main limitation of raster graphics is that pixels cannot maintain their appearance as the image becomes larger; for this reason, when you zoom into a raster image, it becomes blurry. Unlike Photoshop, Illustrator operates with vector graphics—this means that the way an image is rendered is defined by mathematical formulas, the variables in which a designer inserts by using Illustrator's tools (PsPrint). For example, a curved line drawn in Photoshop will consist of pixels; its shape and borders are defined by the way a designer brushes over the "canvas," and when you enlarge it, pixels will be able to sustain the shape of the drawn object only until a certain limit—after you surpass it, the image will become blurry. In Illustrator, the shape of the line is derived from the coordinates set by a designer's drawing tool. Respectively, when you enlarge such an image, it will not lose its quality, because pixels have nothing to do with the image's creation here (although your monitor still uses them to display the result of the mathematical calculations behind the image).

Photoshop is unparalleled in terms of creating realistic, nature-like images. A skilled designer can create a Photoshop illustration that will look incredibly realistic, to the extent that it is difficult to distinguish it from reality; besides, Photoshop can edit already existing images with great precision—how many times have you looked at a celebrity's photo in a magazine and wondered, which part of it is "natural," and which is edited? The only drawbacks here are that a designer working in Photoshop must have initial images to work with, and also the scale: after a certain threshold, the image will pixelate and inevitably lose quality. Illustrator cannot match with Photoshop in terms of realism or editing capabilities, however Illustrator's main purpose is creating brand new images from scratch, and designing all kinds of elements which must look perfect under any conditions. For example, a company's logo will most likely be created in Illustrator, since whatever scale it is set to, it will always retain its shape and other properties. Illustrator is widely used for creating brand books, corporate style, fonts, packages, and other similar production (Designcontest.com). All this does not mean that a talented designer cannot use each of these programs however he or she likes.

Both Adobe programs—Photoshop and Illustrator—are the most convenient and essential tools for any graphic designer. The main difference between them lies in the principles they work with: Photoshop operates with raster graphics, and Illustrator utilizes vector graphics; based on the advantages and shortcomings of these principles, the purposes these programs are used for also differ: Photoshop is mainly used for editing photos and for image post-processing, and Illustrator is great for drawing, creating images from scratch. A skilled designer uses both of these programs to achieve incredible results.

References have been omitted. Note that for your essays, you are expected to use the IEEE citation style, notes of which can be found below.

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