**Paragraph structure, topic sentences and transitions**

**Pre-Class Activities**

**Paragraphs**

Paragraphs are extremely important components of an effectively structured piece of writing because they organize material in a way that makes it easier to follow for your readers. Without them, even the most fascinating piece of work will fail to attract the attention it deserves. Structuring your writing into clear, effective paragraphs that address individual ideas will help you organize your work, which in turn gives your readers the best possible chance of understanding the points you are trying to make.

Scientists and researchers often find themselves communicating the results of important studies in an attempt to convince others that they have discovered a new piece of knowledge that will have implications for future research and/or immediate real-world applications. As such, it is even more crucial that they are able to tell a story effectively because they have to convince their audience that their arguments are valid.

The three golden rules below will help you to write clear paragraphs, although you should note that these are just the main ones that you will need to focus on; there are plenty of others that will improve your writing as well. To begin with, try to make sure that you:

**1.** Make one main point per paragraph. It is good practice to tell your reader in one clear, concise sentence (called a topic sentence) at the beginning of each paragraph what you will be expanding upon in that particular paragraph.

**2.** Funnel information from general to specific. Treat each paragraph as a mini-essay, each with its own topic sentence. It is a good idea to start by providing general information before making the information that follows more specific.

**3.** Provide evidence to fully support each paragraph. Although it is a good idea to make most paragraphs roughly similar in terms of word count, it is more important to make each paragraph similar in terms of content completeness. You must provide evidence to back up the general statement(s) made early in each paragraph.

**Question 1 (1 mark)**

Imagine that you have been working on a chemistry project and have drafted a short report to detail what you have learned. Read this draft below. Which of the five sentences contains information that does not relate very closely to the rest of the text?

(1) Polybrominated diphenyl ethers (PBDEs) and tetrabromobisphenyl A (TBBPA) are flame-retardant chemicals that are added to materials in order to reduce their flammability. (2) Certain flame retardants have been banned from use in consumer products because numerous studies found them to be toxic. (3) However, many consumer products such as televisions, curtains, and furniture foam may contain other flame-retardant chemicals with unknown health effects. (4) Many homeowners would like to purchase goods without flame retardants because they don’t think fires are likely to start; however, these goods are very difficult to find. (5) The two main mechanisms for incorporating flame retardants into materials such as plastics and polyurethane foam are by either mixing them with the base material or chemically binding them to it.

**Question 2 (4 marks)**

Re-read the draft of writing about flame-retardants (above, question 1) and use the **three golden rules** described on the first page to restructure the writing into effective paragraphs. *Hint: You should split the text into three different paragraphs and will need to reorder the sentences. You can copy and paste the text as you do this to save time.*

**Topic Sentences**

Remember from the previous section that an effective topic sentence must inform your reader what the paragraph is about, and it should also link the flow of your argument from the previous paragraph to the current one. It is usually a good idea to make the first sentence of your paragraph the topic sentence.

As a rough indicator of whether you have written clear topic sentences, a reader in a real hurry should be able to read these, and these only (i.e. avoid the detailed information in all the paragraphs), and still be able to understand the backbone of the argument you are making.

**Some example errors and improvements**

A1 (topic sentence missing):

“When cornered by a pack of wolves, even the most terrified hare will run within the closing circle, desperately seeking an escape route. Fish caught in a trawler net will swim round and round, looking for a way out. Even primitive micro-organisms will move as far away as possible from a negative stimulus, somehow conditioned to flee from impending death.”

**B1 (with effective topic sentence):**

**“There is a huge diversity of life on earth, but all organisms display a common desire to survive.** When cornered by a pack of wolves, even the most terrified hare will run within the closing circle, desperately seeking an escape route. Fish caught in a trawler net will swim round and round, looking for a way out. Even primitive micro-organisms will move as far away as possible from a negative stimulus, somehow conditioned to flee from impending death.”

**A2 (topic sentence does not relate closely enough to paragraph):**

“There is a huge diversity of life on earth, but all organisms display a common desire to survive. When cornered by a pack of wolves, even the most terrified hare will run within the closing circle, desperately seeking an escape route. Wolves co-ordinate their hunting efforts so as to increase their chances of catching prey, but those with higher social ranks earn the right to eat before their inferiors. Hares, on the other hand, typically forage for food on their own. Although they do not benefit from the increased awareness of where food might be, which would come from searching with others, they never have to share their food when they find it.”

**B2 (topic sentence relates directly to paragraph):**

**“Wolves and hares use different foraging strategies, and there are positives and negatives associated with each.** Wolves co-ordinate their hunting efforts so as to increase their chances of catching prey, but food must be shared and wolves with higher social ranks earn the right to eat before their inferiors. Hares, on the other hand, typically forage for food on their own. Although they do not benefit from the increased awareness of where food might be, which would come from searching with others, they never have to share their food when they find it.”

**Questions 3, 4, 5 and 6 (1 mark each, 4 marks total)**

Study the following paragraphs and the three different options for a topic sentence. Choose the most suitable one for each.

**Question 3 (1 mark):** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.Most New World monkeys have prehensile tails that are able to grasp objects, while Old World monkeys either have no visible tail or a non-prehensile tail.

1: Old World monkeys have more useful tails than New World monkeys.

2: The type of tail a monkey has typically depends on the group it belongs to.

3: New World monkeys are more intelligent than Old World Monkeys.

**Question 4 (1 mark):**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.Asteroids are composed mainly of rock and metals. They can be found in the Asteroid Belt between Mars and Jupiter. Comets are mainly ice and reside in the Kuiper Belt past the orbit of Neptune as well as in the Oort cloud in the outer solar system.

1: Asteroids and comets are planetary bodies in our solar system.

2: Asteroids and comets both orbit the Sun, but in different locations.

3: Asteroids and comets differ in their composition and location in space.

**Question 5 (1 mark):**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. One such series is that of uranium-238, which eventually forms the stable lead isotope lead-206. As uranium-238 decays, radioactive daughter elements are formed which then further decay by either alpha or beta decay until lead-206 is formed.

1: Naturally occurring radioactive elements undergo radioactive decay to form a stable daughter product through a series of decay steps.

2: The uranium-238 decay series is a naturally occurring process that ultimately forms a stable daughter product.

3: A stable uranium isotope is the final element in a series of decay steps that radioactive elements undergo.

**Question 6 (1 mark):**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.For example, many parents have refused to give their children the triple vaccine of measles, mumps and rubella because of the suggestion that it increases the risk of developing autism. This is despite independent research finding no evidence to support a link between the two. Further independent research shows that there has been an alarming increase in the number of measles cases in children that did not receive the vaccine in recent years. Despite this fact, a high proportion of parents are still reluctant to administer the triple vaccine to their kids.

1: Children that have not been vaccinated against measles have a higher chance of contracting the virus.

2: Although studies have confirmed many vaccinations are safe to use, some vaccines are still doubted.

3: Some parents have relied on speculation in order to make choices regarding their child’s health.

**Questions 7, 8, and 9 (1 mark each for identifying the problem, 1 mark for the re-written topic sentence; 6 marks total)**

For the following three questions, read the **bolded** topic sentence (and paragraph that follows it) before deciding which **one** of the following problems makes each one a **poor** topic sentence:

A) It is **too broad**, and it is therefore hard to cover in sufficient detail in one paragraph

B) It is **too narrow**, and there is therefore too little to expand on in the paragraph

C) It **lacks focus**, and is therefore hard to link it to the support of one idea

D) The language is **too specialist**, and therefore might not make sense to everyone

Once you have decided this, re-write the topic sentence so it is more effective.

**Question 7 (2 marks)**

**Many fruits are of the seedless variety.** For example, the majority of bananas that are commercially available are seedless Cavendish bananas. In addition to being seedless, these bananas are also all genetically identical. This means that they lack genetic diversity and a single disease could potentially wipe out banana crops.

**Question 8 (2 marks)**

**Coagulation via filter alum addition during drinking water treatment is a crucial step for removing colloids.** These fine particles are not removed during previous steps, as they are too small. The addition of the filtering aid, filter alum, causes a precipitation reaction and allows the fine particles to settle out with the precipitate.

**Question 9 (2 marks)**

**Microorganisms in Lake Hillier, Australia, produce pigments that range in colour and are responsible for making the water appear pink.** These pigments, called carotenoids, range in colour from yellow to red and give the lake its unique colour. The microorganisms store the pigments throughout their cell membrane, making the lake water appear pink.

**Making Smooth Transitions**

We have already seen that a piece of writing containing interesting, important information will fail to get the message across if it is not structured into clear paragraphs. In the same way, such information will not make an impact on a reader if the flow of ideas does not transition seamlessly from sentence to sentence, or from paragraph to paragraph.

When reading over your work, ask yourself whether the flow of information is smooth. Although it is often difficult to remember everything that you have just read, it is a bad sign if you find yourself having to jump backwards again and again to fully understand something.

Before you get used to making smooth transitions, it is a good idea to ask a friend or classmate to read your work and tell you whether they followed your thought process from the first sentence to the last. If they found it difficult, you probably need to work on your transitions. An effective transition should do at least two of the following three things. It should:

**1.** Signal the point at which you are shifting to another idea

**2.** Act as a preparatory signpost for what is coming up next

**3.** Explain to the reader how each idea is connected

**Two examples**

**A1 (Poor transitions):**“Global warming will have negative consequences for polar bears. As temperatures rise they will have a smaller habitat in which to live. Also, there will be less food available for them because there will be smaller populations of krill. Polar bear populations are thus affected by the amount of ice available.”

**B1 (Good transitions):**“Global warming will have negative consequences for polar bears for two main reasons. Firstly, because increased temperatures cause increased melting of ice on which the bears live, there will be a reduced area in which they can live. Secondly, many species that polar bears rely on for food will be less numerous than in the past because their main food source, krill, can only breed successfully underneath ice. Therefore, the reduction of ice is the key factor in limiting polar bear populations.”

B1 is better than A1 because:

**1.** **Each transition informs the reader that a new idea is about to be elaborated on**

**2. Each sentence begins with a ‘signpost’ that links it to the next one**

**3.** **Each transition connects the points made in the whole text with one another**

**Question 10 (5 marks)**

Imagine that you are writing a summary of an experiment conducted by UBC researchers to see whether climate change affects the flight season of Canadian butterfly species. In less than 250 words you had to describe (1) why the research was important, (2) what the main results were, and (3) why they might have important implications.

Read the ‘original’ draft below and use the three transition pointers above to fill in the gaps suitably. *Hint: It is perfectly acceptable to use more than one word for transitions in your own writing, but for this question, use* ***only one-word examples*** *to fill in the gaps.*

Scientists from the University of British Columbia, Université de Sherbrooke, and University of Ottawa reviewed hundreds of museum and weather records to determine if climate change has affected the flight season timing of Canadian butterflies. [**?????**], researchers analyzed museum collections of 200 butterfly species and estimated flight season timing from specimen collection dates. [**?????**] they collected museum data, researchers matched the flight season timing to weather station data from the past 130 years. They concluded that temperature sensitivity was common among the species they analyzed, [**?????**] flight seasons began approximately 2.4 days earlier for every one degree Celsius increase in temperature.

Earlier flight seasons may have major implications for butterflies, especially when the flight season begins early enough that butterflies encounter sudden frosts. [**?????**], in these circumstances, they can die while migrating. In addition, declines in populations can also act as an early warning sign as to how other animals might respond to global climate change. [**?????**], butterfly flight season timing studies are very valuable from a conservation perspective because butterflies are indicator species for other wildlife.

**Question 11 (5 marks)**

There are eight transition words or phrases in the body of text below (these have been **bolded** for you). Five of these are poor transitions. Underline the five poorly chosen transitions. *Hint: If you underline more than five, you will have marks taken away!*

It is a common misconception that scientists do not use creativity in their research because it might interfere with their objectivity. **Obviously**, some people think that following the scientific method of designing a hypothesis, then an experiment, analyzing the results, and then writing them up means there is no room for being an individual. **However**, if scientists did not use imagination and creativity many breakthroughs would not have been made. **Eventually**, in 1878, A.A Michelson calculated the speed of light by designing an ingenious experiment. **First**, he placed mirrors a long way apart. **Concurrently**, he made sure that one was spinning and then focused light on the other, which reflected back onto the spinning one. **Nevertheless**, the spinning meant the returning beam was deflected. **Lastly**, he measured the deflection before calculating the speed with a formula. **Therefore,** technology has improved since then but the accepted speed of light is very similar to the value he originally calculated.