



Supplementary Module for
[The Word Combination Card](#)

Essay Module: Identifying Causes of Greenhouse Gas Emissions

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Level: High Intermediate to Low Advanced ESL

Overview: This unit consists of a series of exercises that lead to the writing of an essay on the sources of greenhouse gas emissions as listed and described by the Environmental Protection Agency (<https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>).

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1. Reading the Essay

Instructions: The following essay contains four paragraphs. They are labelled: introductory paragraph, body paragraph 1 and 2, and concluding paragraph. Read the paragraph. Then, summarize the essay in a few paraphrased sentences.

Sources of Greenhouse Gas Emissions: Agriculture and Daily Life

(Introductory Paragraph)

(1) Today, global warming and **climate** change are major concerns in countries around the world. (2) Many scientific studies have shown that the worldwide temperature has increased by about 1.4 degrees Fahrenheit since 1880 (Carlowicz). (3) The effects of this change include heavy rain and tropical storms, flooding in some places, and drought in other places (EPA (a)). (4) Global warming is related to greenhouse gas emissions, but some of these emissions could be reduced if humans made enough effort. (5) Two types of greenhouse gas emissions which could be diminished are commercial and residential emissions and emissions from agriculture.

(Body Paragraph 1)

(6) One common source of greenhouse gas is the daily activities of humans. (7) Every day, people around the world heat their homes and cook their food with gas, coal, and other sources of **energy** from fossil fuels. (8) People often use chemicals or machines that contain chemicals and create industrial **waste** and emit greenhouse gas. (9) In addition, in offices and businesses, people work and do the same activities as they do at home, and so they create some of the same types of emissions. (10) According to the EPA, commercial and residential emissions constitute only 12 percent of all emissions in the United States (EPA (b)). (11) This seems like a small percentage, but it is still significant because humans often do not think about the potential problems. (12) Therefore, it is important for people who use fossil fuels to be aware of the greenhouse gas they create every day in their homes so that they can reduce it.

(Body Paragraph 2)

(13) Another source of greenhouse gas is the agricultural industry, which creates about 9 percent of greenhouse gas emissions in the U.S. (EPA (b)). (14) All humans need to eat, so farmers must constantly produce tremendous quantities of fruit, vegetables, meat,

and grain. (15) Therefore, farmers frequently use fertilizers and other chemicals in the soil to grow produce, and these chemicals enter the **water** supply and create a large amount of greenhouse gas. (16) Chemicals in the land where farmers grow food creates half of the greenhouse gas (EPA (b)). (17) Farmers also raise large numbers of livestock, such as cows and pigs, and these animals are a source of greenhouse gasses. (18) Some animals and their manure emit methane gas negatively affects **air** quality and damages the **atmosphere**. (19) To deal with this, farmers can try to find alternative methods to produce food, and consumers may consider eating less beef or pork.

(Concluding Paragraph)

(20) It is clear that people’s food and lifestyles cause high levels of **pollution** and contribute to greenhouse gas emissions. (21) Moreover, this leads to global warming, and it damages the **environment**. (21) It is not possible to force people to change their lives and the food they eat, but if people make some small changes, they can help to reduce greenhouse gas emissions.

Sources

Carlowicz, Michael. n.d. Global Temperatures 2005-2014. NASA. Web. Access September 20, 2017.

<https://earthobservatory.nasa.gov/Features/WorldOfChange/decadaltemp.php>

EPA (a). n.d. Climate Change Indicators: Weather and Climate. Environmental Protection Agency. Web. Accessed September 20, 2017. <https://www.epa.gov/climate-indicators/weather-climate>

EPA (b). 2017. Sources of Greenhouse Gas Emissions. Environmental Protection Agency. Web. Last updated on April 14, 2017. Accessed September 29, 2017. <https://www.epa.gov/climate-indicators/weather-climate>

Summarize: In 4 to 6 sentences, write a paraphrased summary here. Include main points and a few sample details.

2. Noticing Thesis Statements, Topic Sentences, and Sentence Starters

A. Instructions: First, review the sections *Topic Sentences and Thesis Statements* and *Sentence Starters* in the **Word Combination Card**. Then, based on the essay, answer the following questions.

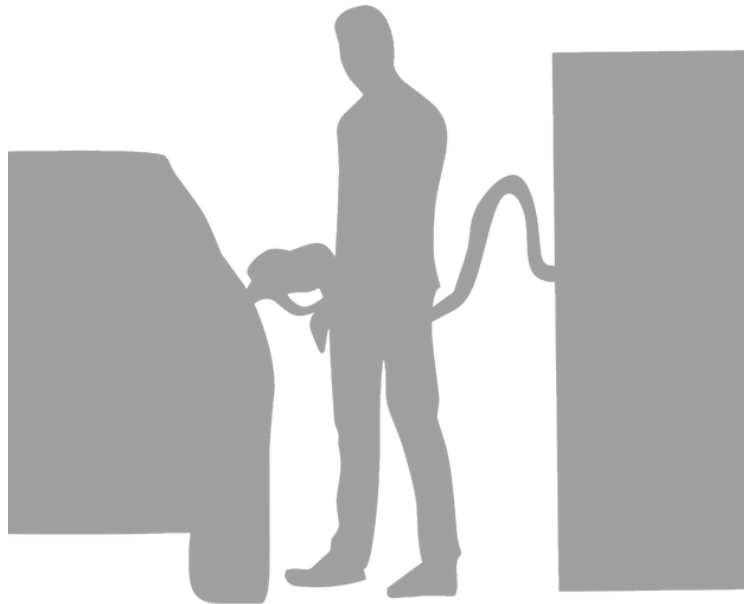
- a. A **thesis statement** is the main idea of an essay. In the essay on pages 2 to 3, the thesis statement is sentence number 5, which is the last sentence of the introductory paragraph. In the “Topic Sentences and Thesis Statements” section of the WCC card, which number sentence pattern is it? _____
- b. **Topic sentences** are main ideas of paragraphs. In this essay, they are the first sentences of Body Paragraphs 1 (sentence (6)) and 2 (sentence (13)). These sentences all begin with “Sentence Starters.” Find the sentences in the essay and write the number of the “Sentence Starter” from the WCC.

(Sentence 6) _____

(Sentence 12) _____

(Sentence 13) _____

(Sentence 20) _____



3. Noticing Collocations and Noncount Nouns

Instructions: Review the *Environment* section in the *Selected Topics* section of the **WCC**. In the essay, the words in **bold** print are words from the list below. Find the **bolded** words in the essay and write those words and the words that go together with them in natural, grammatical collocations. The first one has been done as an example.

- a. Climate: *climate change*
- b. Energy: _____
- c. Waste: _____
- d. Water: _____
- e. Atmosphere: _____
- f. Air: _____
- g. Pollution: _____
- h. Environment: _____

HOT TIP: Paying attention to collocations is an important way to increase one's level of expression and produce accurate grammar.

C. Instructions: In the box below, write as many noncount nouns in the essay as you can find. There are more than 10.

HOT TIP: Learning to distinguish count and noncount nouns in English is difficult but essential, especially in academic writing. Many abstract ideas are noncount nouns. In order to learn to use noncount accurately when writing, pay attention to them when reading.

4. Noticing Types of Thesis Statements

Instructions: First, review Section 1 *Thesis Statements and Topic Sentences* in the **Word Combination Card**. Then, for each sentence below, write the number of the type of sentence. The first has been done as an example.

1. 1 Commercial and residential emissions and emissions from agriculture are two sources of greenhouse gas emissions that could be reduced if people make an effort.
2. There are two types of greenhouse gas emissions that consumers and companies could reduce, namely, commercial and residential emissions and emissions from agriculture.
3. Greenhouse gas emissions that governments could reduce consist of two primary types: commercial and residential emissions and emissions from agriculture.
4. Two sources of preventable greenhouse gas emissions come from transportation and industry.
5. There are two primary sources of greenhouse gas emissions that need to be reduced: transportation and industry.
6. Transportation and industry are two of sources of greenhouse gas emissions that could be controlled.

HOT TIP: A thesis statement is a single sentence that expresses a main position or opinion for an essay, research paper, thesis, or even an entire book. Providing a clear thesis statement helps to make one's writing more effective.

5. Editing Thesis Statements and Topic Sentences

Instructions: First, review *Thesis Statements and Topic Sentences* and *Sentence Starters* in the **Word Combination Card**. Then, edit the sentences below for errors in punctuation. The first one has been done as an example.

Thesis Statements

1. Greenhouse gas emissions consist of a few main ~~types~~. ^{Commercial} and residential emissions and emissions from agriculture. *types: commercial*
2. There are three primary gases that lead to global warming, carbon dioxide, methane gas, and nitrous oxide.
3. Two common reasons why people are concerned about greenhouse gases are: that they see the current changes in the temperature around the world and that they know that the weather in the future will probably become more dangerous.
4. Three effective ways that individuals can reduce the production of greenhouse gas emissions are using public transportation, adding solar-panels on homes, and they should not waste food.
5. There are two essential aspects of farming - growing produce and raising livestock.
6. Driving fuel-efficient cars and using LED lightbulbs, these are two practical ways for individuals to reduce their damage to the environment.

CO²

Topic Sentences in Body Paragraphs

7. The first, method to reduce greenhouse gas emissions is installing solar panels.
8. Another main source of greenhouse gas emissions is: the methane gas that is produced by cows and pigs.
9. The most significant factor in greenhouse gas emissions is that, factories produce both carbon dioxide and many other harmful chemicals.

Hot Tip! Adding adjectives, such as *main, primary, effective, harmful*, and so on, can make ideas clearer and more interesting.

6. Paraphrasing to Connect Thesis Statements and Topic Sentences

Instructions: First, review *Thesis Statements and Topic Sentences* and *Sentence Starters* in the **Word Combination Card**. Then, underline the main points in the thesis statement and the paraphrased ideas in the topic sentences. The first has been done as an example.

- Thesis:** Two types of greenhouse gas emissions which could be diminished are commercial and residential emissions and emissions from agriculture.

Topic Sentence in Body Paragraph 1: One common source of greenhouse gas is the daily activities of humans.

Topic Sentence in Body Paragraph 2: Another source of greenhouse gas is the agricultural industry.
- Thesis:** Two common reasons why people are concerned about greenhouse gases are changing temperatures worldwide and predictions about harmful weather in the future.

Topic Sentence in Body Paragraph 1: The most common issue that worries people is that they see the current changes in the temperature around the world.

Topic Sentence in Body Paragraph 2: The second main cause for concern is that climate scientists predict that weather will probably become increasingly dangerous.
- Thesis:** Two effective ways that individuals can reduce the production of greenhouse gas emissions are using public transportation and adding solar panels on homes.

Topic Sentence in Body Paragraph 1: One effective way to combat greenhouse gas emissions is taking buses, trains, and other types of public transportation.

Topic Sentence in Body Paragraph 2: Another approach is solar panels which are installed on the roofs of buildings where people live or work.
- Thesis:** Driving fuel-efficient cars and using LED lightbulbs are two practical ways for individuals to reduce their damage to the environment.

Topic Sentence in Body Paragraph 1: To start, when people drive cars that use less gas or which use electricity, they reduce the amount of CO₂ that is released into the atmosphere.

Topic Sentence in Body Paragraph 2: Next, by replacing traditional lightbulbs with LED lightbulbs, individuals can leave much smaller carbon footprints.

Hot Tip! Quality academic writing contains a combination of (a) the same or similar words to connect ideas on one theme to provide **cohesive** ideas and (b) different words and sentence types about the theme to provide **variety of expression**.

7. Writing an Essay on Sources of Greenhouse Gas Emissions

Instructions: Write a four-paragraph essay which answers the question “*What are two main sources of greenhouse gas emissions?*” To answer the question, you must use some of the facts that you find on the EPA website (no other websites). You must acknowledge that website by mentioning the source of information in your essay (See *Reporting Information* and *Academic Prepositions* in the **Word Combination Card**) and by listing the title and organization of the webpage after the essay. Look at the sample essay for examples.

Part A: Taking Notes

Instructions: Visit the webpage below of the EPA (*the Environmental Protection Agency*). Write words, numbers, and phrases about the various sources of emissions in the **Notes Box** on the next page. However, when you take notes, do not copy sentences or long phrases: you must only write important words, numbers, and other essential details.

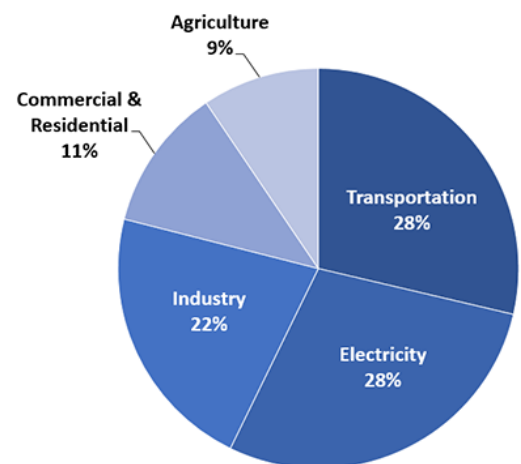
“Sources of Greenhouse Gas Emissions”

<http://www3.epa.gov/climatechange/ghgemissions/sources.html>

As you collect notes, think of these questions to use in your essay. In the EPA website, click on boxes such as “Transportation,” “Industry,” and so on for information about these topics.

- *What is the source/cause? How can you describe it?*
- *How much does each source contribute to greenhouse gas emissions?*
- *How does it happen?*
- *What are examples of it in people’s daily lives?*
- *How can it be reduced? (Tip: See “Reducing Emissions...” on the website.)*

Total U.S. Greenhouse Gas Emissions
by Economic Sector in 2016



U.S. Environmental Protection Agency (2018). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016

HOT TIP: Thinking of many important questions to answer is an effective way to develop one’s ideas and produce higher quality writing. For any topic, try to provide specific answers to the questions *who, what, when, where, and especially why and how.*

Notes Box: In this table, collect notes from the EPA website to answer the questions above in Part A about sources of emissions. Write useful nouns, verbs, numbers, and other details, but no sentences or long phrases. That will help you avoid plagiarizing.

Source #1

Source #2

Source #3

HOT TIP: Take plenty of notes. Taking more notes than needed is helpful because then writers can consider the topic more completely and select the best details to support their ideas. Taking too few notes can result in a lack of important details to develop and support one's ideas.

Part B: Organizing Ideas in an Outline

Instructions: Carefully reread the original question you must answer, the list of questions on page 9, and the notes you collected. Then, in the outline below, write main ideas and details to use in those paragraphs in your essay. In each paragraph below, write at least 15 useful words that you will use when you write your essay. You may copy essential words and expressions, but there must be no copied sentences, and you must paraphrase ideas as much as you can.

Essay Outline

Introductory Paragraph: (a) a couple of background sentences about pollution and (b) a thesis statement which answers the question completely

Body Paragraph 1: (a) a topic sentence related to your thesis statement and (b) four to six sentences of useful description and clear explanation with one or more details from the EPA website

Body Paragraph 2: (a) a topic sentence which is related to the thesis statement and (b) four to six sentences of useful description and clear explanation with one or more details from the EPA website

Concluding Paragraph: (a) one or two sentences which paraphrase your thesis statement and (b) one or two sentences which give a prediction or a suggestion

HOT TIP: Taking notes and outlining is a way to organize ideas, and it can also help writers to avoid plagiarizing because writers are not reading the original source when they write.

Part C: Write the essay

Instructions: Follow these steps to write your essay.

- a. **Understand the question:** Carefully reread the original question and make sure your outline has logical ideas and details that clearly answer the question.
- b. **Review essential sentences:** Review “*Topic sentences and Thesis Statements*” in the **WCC** to produce an accurate, clear, and complete thesis statement and cohesive topic sentences. Also see the “*Reporting Information*” section or other sections in the **WCC**, depending on the kinds of information you need to write.
- c. **Write from your outline and add ideas:** Write your essay based on the questions to answer and your outline, but you should continue to add other details as you think of them while writing. Review the “*Exemplification*” section in the **WCC** to provide examples.
- d. **Paraphrase:** You may not copy any sentences from the EPA website. Use essential details and important vocabulary from the EPA webpage, but all the sentences must be your own sentences.
- e. **Mention the Source:** When you use numbers and scientific facts (at least one per body paragraph), mention the EPA as the source of information. Review “*Reporting Information*” in the **WCC** for examples.
- f. **Edit:** Check nouns, verbs, sentences, and collocations carefully.
- g. **Formatting:** It is common in college writing to provide (a) identification (your name, the class, the date), (b) a short title of an assignment, (c) indented and double-spaced paragraphs, and (d) sources of information after the essay. Look at the sample essay in Exercise 1 for samples.

HOT TIP: Effective paraphrasing and use of details from a source makes a writer look professional and capable. Copying/plagiarizing sentences makes a writer look unprofessional and incapable. Moreover, copying prevents learners from developing their writing, while paraphrasing develops a writer’s writing and critical thinking skills.

Sample Responses to Exercises 2 to 6

2. Noticing Thesis Statements, Topic Sentences, and Sentence Starters

a. Pattern #1

b. Sentence 6 = Pattern #1; Sentence 12 = Pattern #3; Sentence 13 = Pattern #1; Sentence 20 = Pattern #2

3. Noticing Collocations and Noncount Nouns

A. a. climate change; b. types of energy; c. industrial waste; d. the water supply; e. the atmosphere; f. the air; g. high levels of pollution; h. the environment

B. Climate change, rain, flooding, global warming, agriculture, gas, food, meat, grain, produce, soil, livestock

4. Noticing Types of Thesis Statements

1. = Pattern #3; 2. = Pattern #2; 3. = Pattern #4; 4. = Pattern #3; 5. = Pattern #2; 6. = Pattern #3

5. Editing Thesis Statements and Topic Sentences

2. ...warming: carbon dioxide,... OR ...warming, namely, carbon dioxide,...

3. ...are that... (*no colon*)

4. ..., adding solar-panels on homes, and **not wasting food**. (*all gerunds*)

OR

... that **people should use** public transportation, **add** solar-panels on homes, and **not waste** food. (*all verbs*)

OR

...are **that people should** public transportation, **they need** to add solar-panels on homes, and **they should** not waste food. (*all sentences*)

5. ...farming: growing... OR ...farming, namely, growing...

6. Driving fuel-efficient cars and using LED lightbulbs, ~~these~~ are two useful ways for individuals to reduce their damage to the environment. (*no double subject*)

7. The first effective method... (*no comma*)

8. ...emissions is the... (*no colon*)

9. ...emissions is that factories... (*no comma*)

6. Noticing Paraphrasing between Thesis Statements and Topic Sentences

2. Thesis: Two common reasons why people are concerned about greenhouse gases are changing temperatures worldwide and predictions about harmful weather in the future.

Topic Sentence in Body Paragraph 1: The first most common issue that worries people is that they see the current changes in the temperature around the world.

Topic Sentence in Body Paragraph 2: The second main cause for concern is that climate scientists predict that weather will probably become increasingly dangerous.

3. Thesis: Two effective ways that individuals can reduce the production of greenhouse gas emissions are using public transportation and adding solar panels on homes.

Topic Sentence in Body Paragraph 1: One effective ways to combat greenhouse gas emissions is taking buses, trains, and other types of public transportation.

Topic Sentence in Body Paragraph 2: Another approach is solar panels which are installed on the roofs of buildings where people live or work.

4. Thesis: Driving fuel-efficient cars and using LED lightbulbs are two useful ways for individuals to reduce their damage to the environment.

Topic Sentence in Body Paragraph 1: To start, when people drive cars that use less gas or which use electricity, they prevent the release of CO₂ into the atmosphere.

Topic Sentence in Body Paragraph 2: Next, by replacing traditional lightbulbs with LED lightbulbs, individuals can leave much smaller carbon footprints.

HOT TIP: Notice in Exercise 5 that there a number of ways to mention the main points. These include nouns, detailed noun phrases, gerunds, sentences, and other methods. Good writers use structures to achieve cohesion of ideas and variety of expression.