

INTRODUCTION

Many college or university courses require students to submit a **research paper** at or near the end of the term (for this reason, it is also called a *term paper*). The purpose of a research paper is to exhibit scholarship; that is, to demonstrate your ability to investigate some aspect of the course subject matter in depth. This does not mean merely gathering a collection of what others have written or said about your topic. Instead, it offers an opportunity to examine, compare, synthesize, evaluate, and even challenge these sources so you can reach an informed opinion, or thesis. The thesis you pursue in the research paper should therefore provide new, unexpected, or complex information that goes beyond the general information found in an encyclopedia.

In a sense, the research paper does not differ greatly from the kinds of essays you have done throughout the book. The main difference is in the research paper's formal treatment and acknowledgment of these sources in the body and at the end of your paper. Typically, a research paper is also longer than the essays you have written previously, ranging anywhere from five to twelve pages, or even longer. Since research writing applies to any topic, this chapter will demonstrate this diversity by examining two models about public safety.

ANALYZING THE MODEL

This model addresses an issue that was somewhat personal to the writer, as she grew up a short distance from the place where the incident she discusses occurred.

Read the model. Then answer the questions.

Writing Model

Mayak: The Unknown Disaster Ksenia Laney¹

1 The world knows about the Chernobyl disaster in 1986, the only nuclear event that rated the highest-level International Nuclear Event Scale. The event drew great publicity, which eventually contributed to the complete shutdown of the facility in 2000. However, many people are unaware of a comparable catastrophe at another nuclear plant on September 29, 1957, near the city of Chelyabinsk in Russia. The event has had lasting effects on both the population and the environment surrounding the facility.

2 The event is called the Kyshtym disaster, and it happened at Mayak, a nuclear fuel reprocessing plant. The plant was built hastily and secretly in 1945–1948, because its original goal was to produce plutonium for weapons. That time can be called the dawn of Russian nuclear industry because so many technologies were just being developed. However, as Alex Rodriguez states in “Cold War Secrecy’s Fallout: In Russian Village, Nuclear Waste Points to Legacy of Neglect,” the plant was constructed with many flaws. One such flaw required “workers to clean

by hand the filters that separated plutonium from other, unneeded radioactive isotopes.” Other structural mistakes caused explosions of equipment and enormous consecutive spills that quickly filled the waste tanks, which eventually forced the facility officials to dump the waste in the nearby Techa River and later in Lake Karachay (Rodriguez).

3 With so many defects in its construction and maintenance, it is no surprise that in 1957 the cooling system of one of the tanks failed. The failure caused an explosion with a force of about seventy to one hundred tons of the explosive TNT and the release of seventy to eighty tons of radioactive waste. Journalist Alexander Zaitchik reports the memories of the witnesses of the disaster in his article, “Inside the Zone.” Villagers heard first the loud boom away from the town and then felt shocks strong enough to rattle plates and crack the windows. As one of his interviewees, Gulchara Isnagilova, who was eleven years old at the time, remembers, “Around the smoke it was the color of sunsets.”

4 The beauty of the scene masked the terrible consequences for the people in the area. Soon after the explosion, they began to fall ill, and, even after policemen arrived to “protect” them, citizens never received any explanation for their illnesses. Moreover, children and young people in the area were sent to destroy the contaminated objects: to burn crops, bury animals, and dismantle buildings. As Chelyabinsk state records show, around 1,800 adolescents worked with no protection while cleaning. In recent years after a long court process, the government was forced to compensate those people who could prove to have worked as cleaners at the time. Their compensation was 280 rubles (\$11) a month (Zaitchik). Even that meager compensation was not given to people until 1990 because the Soviet government tried to conceal the event, even from the people of the region. The area was renamed the East-Ural Nature Reserve by the government and, therefore, was closed to any unauthorized access (Zaitchik).

5 Officials finally acknowledged the disaster and its effects only thirty-five years later, in 1992. It was then revealed that approximately 800 square kilometers (almost 500 square miles) of inhabited territory were contaminated long-term as a result of the explosion. Zhores A. Medvedev, an ecologist, writes that animals and vegetation suffered radiation damage from nearby stored nuclear waste released by the heat of the explosion.

6 The revelations about the previous spills and explosions eventually followed. It was admitted that a large amount of moderate to highly radioactive waste had been dumped into the Techa River from 1949 to 1956. During its entire existence, the Mayak nuclear unit released about seventy-six million cubic meters of waste into the river, which greatly affected more than 28,000 people in the area (Medvedev). Moreover, the documentary film by Slawomir Grunberg, “Chelyabinsk: The Most Contaminated Spot on the Planet,” states: “Russian doctors who study radiation sickness in the area estimate that those living along the Techa River received an average of four times more radiation than the Chernobyl victims.” The BBC (British Broadcasting Company) News also reported that a massive amount of waste had been “pumped from Mayak into a lake that even today is capable of delivering a fatal dose of radiation within an hour.” This area is now named East-Ural Radioactive Trace, and its previously fertile soil is no longer used for agriculture (Grunberg).

7 Scientists who compare the Chernobyl and Kyshtym disasters rate Kyshtym one level lower in the International Nuclear Event Scale. However, the level of radiation emitted is less important than the government's treatment of those near the two disasters. The Chernobyl area was largely evacuated after the accident, whereas the survivors of Kyshtym and their descendants still live in the radioactive area. The consequences of this lifelong presence are terrible. “Russians in the region surrounding the plant get thyroid cancer at nearly twice the nation's average rate.

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¹Ksenia Laney, born Senenko Ksenia Yurievna, is a former student at Truman College in Chicago. She learned of the Kyshtym disaster while she was attending high school in Chelyabinsk, Russia, just fifty-one miles from the Mayak nuclear plant.

The incidence of lung cancer in the Techa region is 70 percent higher than the average for Russia; the rate of colon cancer is 44 percent higher" (Rodriguez). The worst and the saddest effect is on children. Lena Morozova, a villager in the area, comments, "We're all sick. As for the children, I don't know. It's some kind of dying generation" (Grunberg). When Grunberg was making his documentary, he met children fishing on the Techa River. His Geiger counter showed that the fish contained twenty times the normal amount of radiation. He then visited a famous osteopath whose patient told him that many, many children in the area of the Mayak complex are born without hands, legs, and feet. Physiological problems are not the only ones that occur. "At the time of Mayak's construction in the late 40s, mentally handicapped students were a rare occurrence at the school. Today, 80 out of 1,360 students are categorized as having mental handicaps" (Zaitchik).

8 Considering all the terrible consequences of the Mayak explosion, one would expect that, after the Soviet Union dissolved, the plant would be shut down completely. However, this is not the case. Mayak is still working and still dumping all the waste into the river and the lake. Moreover, the majority of the population of the area still lives there, with no meaningful support from the government, experiencing a financial ruin that is sickening and killing the population that radiation did not wipe out already.

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Questions about the Model

1. What is the thesis statement of the paper? Circle it.
2. Find the topic sentences in each body paragraph. Which transitional phrases relate to the content of the preceding paragraph? Underline them.
3. Why does Laney make a number of comparisons in her paper?
4. What is the function of the quotations in the paper? Why are they necessary?
5. How is the paper organized—chronologically, topically, or a combination of the two?
6. How does Laney initially identify the sources in the body of the text, and how does she handle a subsequent reference to the same source?
7. Why would readers want to see a list of works cited?

Noticing Vocabulary: Antonyms

An *antonym* is a word with the opposite meaning of another word. As you saw in Chapter 1, some antonyms are formed by adding a negative prefix (*un-*, *im-*, *in-*, *il-*, *ir-*, or *dis-*) to the original word. Other antonyms, such as *slow* and *fast*, are entirely different words. You may use antonyms in writing when you contrast ideas or when you define terms—saying what something means as well as what it does not mean.

PRACTICE 1

Finding Antonyms

Look at the writing model again and find each word in the writing model. Then write its antonym in the space provided. Use a dictionary as needed.

1. unaware (paragraph 1) aware
2. comparable (paragraph 1) _____
3. hastily (paragraph 2) _____
4. prove (paragraph 4) _____
5. dismantle (paragraph 4) _____
6. meager (paragraph 4) _____
7. contaminated (paragraph 4) _____
8. inhabited (paragraph 5) _____
9. capable (paragraph 6) _____
10. fertile (paragraph 6) _____
11. massive (paragraph 6) _____
12. descendants (paragraph 7) _____

ORGANIZATION

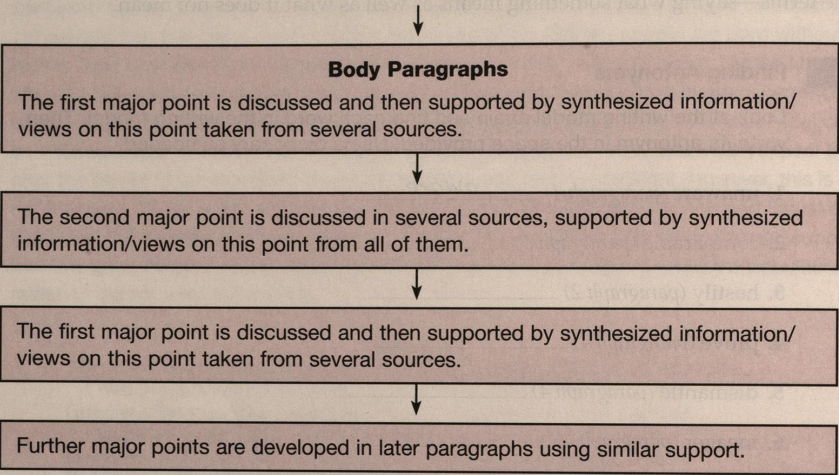
Depending on its audience, purpose, and topic, your paper will be organized in the manner of one of the genres you have studied in previous chapters: classification, process, cause / effect, argument, and definition.

For example, the writing model is a cause / effect paper that examines the multiple causes and effects of the Kyshtym disaster. The writer uses both chronological order (chain organization) and block organization in order to present the sequential events which led to the disaster, and the multiple and non-sequential effects of the disaster.

Additionally, you can organize the body paragraphs either by common key points (**point-by-point** organization) or by source (**source-by-source** organization). As always, the thesis should present the main point or claim on the topic. The body and conclusion should develop the main idea by presenting general points and synthesized information from your sources.

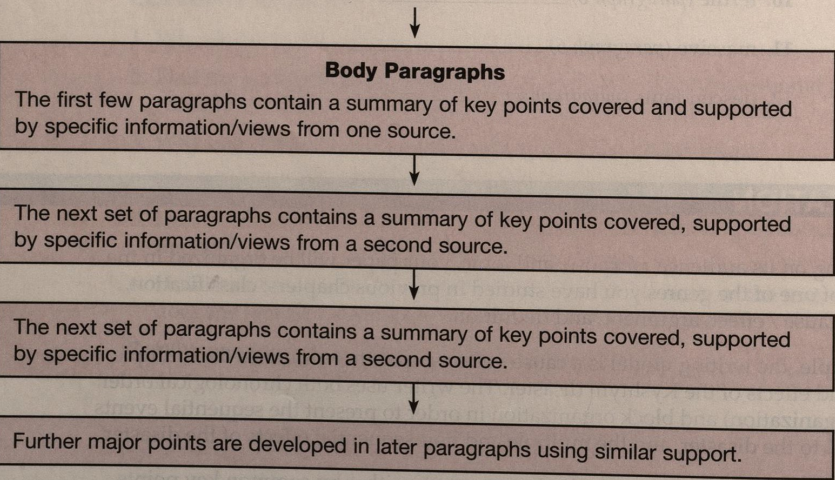
POINT-BY-POINT ORGANIZATION

You are already familiar with this organizational pattern from Chapter 8. As mentioned in that chapter, a point-by-point pattern is particularly well suited to complex issues and longer papers, which makes it a useful way to organize a research paper. A partial diagram of how a point-by-point organization might be used in a research paper looks like this:



SOURCE-BY-SOURCE ORGANIZATION

A source-by-source organization is somewhat similar to a block organizational pattern in that it groups the information in blocks according to the source.



Make sure to connect your sources by discussing related key points and by using transitional phrases to show similarities and differences among the sources. For an example of a source-by-source organizational style, return to the writing model from Chapter 5 on pages 87–89.

PRACTICE 2

Recognizing Organizational Patterns

Work in pairs or small groups. Read and analyze the short research paper. Decide on its genre (process, definition, argument, and so on) and its organizational pattern.

Problems with Food Labeling
Aksana De Bretto¹

- 1 When careful consumers shop for food, they inspect the packaging in order to decide which brands to buy. Each product must include a list of ingredients and a nutrition guide of vitamins and minerals. However, food companies understand that they can entice consumers with other information. Some product packaging claims that the food is “good for you” or can help reduce the risk of heart disease. Two departments of the federal government are responsible for regulating these labeling practices: 1) the United States Department of Agriculture (USDA) and 2) the Food and Drug Administration (FDA). “The USDA handles meat,” writes Kent Garber, “and the FDA takes care of pretty much everything else.” A growing challenge for these agencies is to ensure that the packaging is not misleading or deceptive.
- 2 The challenge is not simple. The companies that manufacture and sell food realize that labels are marketing tools. They use key phrases to appeal to consumers’ concerns for health, nutrition, and safety. For example, Clare M. Hasler describes how companies used to claim that a certain ingredient or food promoted better heart health. Now those companies must prove that claim before receiving government approval (1217S). In addition to information approved by the USDA and FDA, however, companies may add descriptions that are true but have little value. A typical example in 2008 was the common claim that new products were “natural” (York, et al.). Other examples come from companies that have designed their own slogans or logos stressing the words “low fat” or “low cholesterol” (Hasler 1219S).
- 3 Such labeling can be incomplete or even misleading. Advertising foods as “natural,” even if it is true, can make consumers think less about nutrition and the portion sizes of the food they eat. American Dietetic Association spokeswoman Keri Gans warns that “When someone hears, ‘That’s natural,’ they think ‘That’s good for me; I can eat as much as I want’” (Eng and Deardorff). An even bigger problem arises if someone wants to know whether the food they eat contains the glutamates known as MSG. It is a food additive that flavors many processed foods, including soups and snacks like Doritos. Food labels might say “MSG Free” or “No MSG,” but that only means the manufacturer did not add MSG to the final product. However, “MSG can be present and not listed because it might be part of other ingredients” (Eng and Deardorff).
- 4 Whether because there is too much information to digest, or because companies try to mislead consumers, the result is that consumers have difficulty understanding the information they read. Hasler examines an FDA study about labeling and concludes: “Evidence to date suggests that this mode of communication has had limited success and in fact may be misleading to consumers with regard to understanding of scientific evidence as well as overall diet choices” (1219S). Labeling is useful only if it is fully understood.

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¹ Aksana De Bretto, whose country of birth was Belarus, is also a former student at Truman College in Chicago.

GRAMMAR

When writing a research paper, you will need to paraphrase ideas. When you paraphrase, remember to be careful with the sequence of verb tenses, especially with complex sentences that express time relationships. In complex sentences, these verb tenses fall into a sequence.

SEQUENCE OF TENSES

Use a present simple *verb*, not a future tense verb, in dependent clauses of time, usually beginning with *after*, *before*, or *once*. Use the future-tense verb in the independent clause, as in these examples:

After a nuclear plant **has** an accident, the cleanup **will be** very dangerous.

The plant **will be** carefully inspected **before** it **resumes** operation.

Once the construction **is finished**, the building **will be** ready for occupancy.

Use a present simple tense verb or a present perfect tense verb in dependent clauses establishing a future condition, usually beginning with *if* or *unless*. Again, the verb in the independent clause is in the future tense.

If the site **is** still radioactive, it **will not resume** operation.

No food **will be** safe to eat in the area **unless** the ground **is** free of radiation.

No car **will be allowed** on the road **unless** it **has passed** a thorough safety inspection.

It is also helpful to know that according to custom, specific genres of academic writing often use certain verb tenses more frequently than others:

RULES	EXAMPLES
1. The <i>present simple tense</i> (such as <i>show</i> and <i>shows</i>) is often used in abstracts, summaries, and reports on findings.	Aksana De Bretto describes the aftermath of a devastating nuclear reaction.
2. The <i>past simple tense</i> (such as <i>discovered</i> and <i>found</i>) is often used to relate details of experiments.	Scientists found the level of radiation to be extremely high.
3. The <i>present perfect tense</i> (such as <i>has</i> / <i>have done</i>) is used to describe ongoing processes that began in the past, to refer to completed events in the indefinite past, and to refer to sources in ongoing debates.	Researchers have reported a number of significant problems. Stephen D. Krashen (2004) has emphasized critically important practices in second language learning.
4. The <i>present / past progressive tense</i> (<i>is doing</i> / <i>was doing</i>) is used with adverbs such as <i>always</i> , <i>continually</i> , <i>sometimes</i> , or <i>often</i> to discuss repeated events.	Researchers are continually reviewing their findings. Marie and Pierre Curie were always underestimating the toxic effects of radiation.

5 Consumers look to the federal government to regulate food manufacturers, but in many ways the government is not doing enough. Kent Garber reports that the FDA inspects only about one percent of the seafood and fruits imported into the United States. Moreover, one reason companies can still say that foods have no MSG, even when they really do, is that the Department of Health and Human Services has never enacted an FDA's 1996 proposed requirement in ingredient labeling (Eng and Deardorff). Privately developed slogans, like Pepsi's "Smart Spot" and Kraft's "sensible solutions" logo, were the subject of a 2007 public hearing organized by the FDA (Hasler). The USDA only recently dictated that meat raised without hormones or antibiotics, and that had never been fed animal byproducts, could be labeled "natural" (York, et al.). However, this ruling applies only to meat. Many other foods still can claim to be natural. The main agencies responsible for regulating labeling are still developing policies while the food manufacturers fight to stay a step ahead of them.

6 According to Garber, one way the government agencies try to cope with this battle is to allow third parties to do some of the work for them. "The responsibility for food safety, as it works today, lies heavily in private hands," Garber explains. Food companies hire "food safety consultants." However, the problem is that "For one thing, there's no certification system for these third-party inspectors." And the companies that use them often operate under voluntary, rather than required, guidelines for sanitation and inspection (Garber).

7 One result of this loose system is that consumers are unknowingly exposed to ingredients that are not yet clearly understood. Researchers are still not certain about the effects of MSG. They cite a 1990 FDA study that showed it could damage nerve cells in the brain and another study from 1995 that showed "though most people can eat MSG safely, 'an unknown percentage' may suffer from 'chest pain, headaches, nausea, rapid heartbeat and drowsiness'" (Eng and Deardorff).

8 In at least one way, though, private industry may be self-regulating for purely self-interested reasons. Claims that foods are "natural," for example, can be disputed to the Better Business Bureau. York, Zmuda, and Miley note that "the complaints are generally raised for competitive reasons." In other words, if a company is trying to stretch the truth in labeling a product, a competitor will likely cite the deception even if consumers do not. But the Better Business Bureau does not regulate our foods and is not accountable for our safety from hazardous or misleading products. Until the government can do a better job of ensuring that our food is safe and we are honestly told what it contains, we consumers will continue to have difficulty understanding how to make better food choices.



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