SREB Readiness Courses

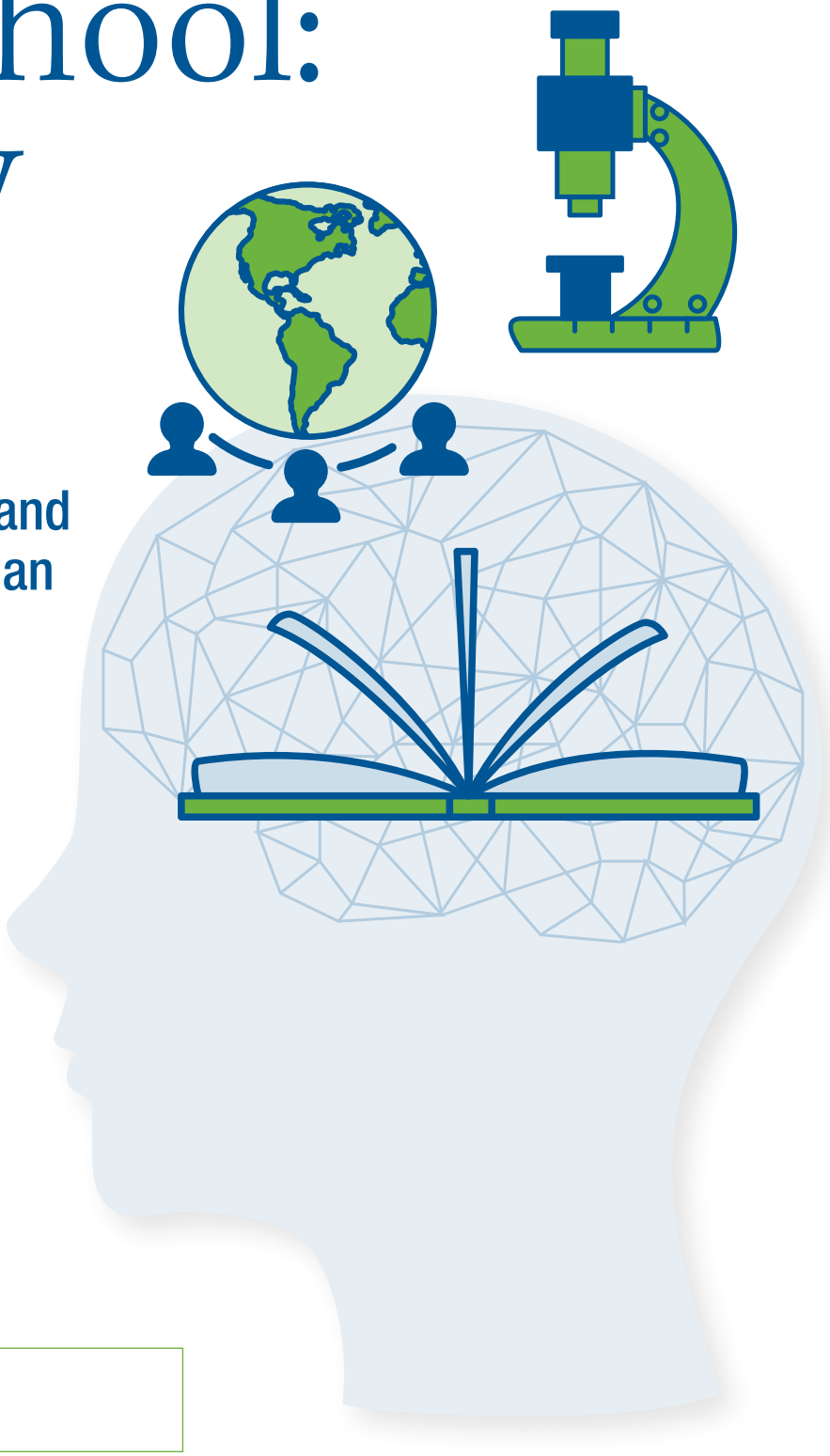
Ready for High School: Literacy

Academic Notebook

English Unit 1

How the Brain Functions and What It Means To Be Human

Informational Text



Name

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Course Overview

Welcome to the first English literacy unit of the SREB Readiness Course — Ready for High School: Literacy. What does English literacy mean? English literacy is based on an understanding that texts — both literary and informational — enable us to understand human experiences and that literary texts are open to dialogue between and among readers and texts. In this course, you will take part in several activities aimed at improving your literacy, specifically as literacy is used in English. While certainly the content covered in this course is important, a principal purpose of this course is to equip you with the tools necessary to be more successful in your high school coursework. To that end, the creators of the course have developed this academic notebook. The theme for this six-week English course is "How the Brain Functions and What It Means to Be Human." The reading text for this course will be John Fleischman's *Phineas Gage: A Gruesome but True Story About Brain Science*. This course focuses on the kinds of disciplinary literacy you will be expected to undertake in a high school setting. The course as a whole includes six units, with two each in English, science, and history.

In this unit, students will be expected to do the following:

- Read and analyze *Phineas Gage: A Gruesome but True Story About Brain Science* and supplemental readings.
- Learn vocabulary from the text.
- Determine sequences of events in the book and in additional readings.
- Summarize ideas from the reading selections.
- Develop stances on ideas from the central text.
- Write and give a presentation.

Purposes of the Academic Notebook

The Academic Notebook has several roles in this course. First, you will keep a record of your reading of the central text, *Phineas Gage: A Gruesome but True Story About Brain Science*, by making reading log entries for assigned readings. The idea behind the reading logs is to collect your notes and ideas about your work in this central text. The notes that you take in the reading log will be used at the end of the unit as preparation for a presentation, in which you will explain conditions that affect the brain.

A second role of the notebook is to provide you with a space in which you can make note of new vocabulary that you encounter in the text and collect information about the meanings of those words. To carry out this role, you will use vocabulary charts to make note of words that are new to you, write the context in which you find the word, rate your understanding of the word, and write a dictionary definition for the word as well as your own understanding of that definition.

The final role of the notebook is that of an assessment tool. Your instructor may periodically take up the notebooks and review your work to ensure that you are remaining on task and to assist you with any material that is causing you difficulty. At

the end of this six-week module, your instructor will review the contents of this notebook as part of your overall grade. Thus, it is important that you take this work seriously as this notebook becomes the record of your activity in this course.

You will notice that some of the work involved in this course will need to be done as homework. For some of you, this amount and difficulty of homework may be a challenge. As the purpose of this course is to prepare you for the types of reading and writing you will do in high school, and as high school courses typically require significant amounts of homework, it is important that you commit yourself to maintaining consistency in your homework.

The academic notebook is organized by lesson, and your teacher will give you instructions on which pages you should attend to during class and for homework.

Lesson 1

Using Your Brain: A Gateway Activity

In this lesson you will

- Participate in an activity designed to engage you with the content of the unit and to assist you with understanding the complexities of the human brain.
- Explore the nature of disciplinary literacy in English/language arts classes, as well as the goals and purposes of the course.
- Read informational text to draw conclusions and make predictions and to recognize the central idea, steps in a process, and cause and effect.
- Examine the essential question, “How do conditions of the brain affect us emotionally, physically, and intellectually?” as well as the final assignment for the unit, which involves creating a presentation.
- Learn and practice the skills of annotation.
- Learn parallel structures and identify them in the central text.
- Read two accounts of the same event and identify similarities and differences in those accounts.

Activity

1 Left vs. Right

1. Make a rough guess as to what brain dominance you think you have, and provide two pieces of evidence.

My guess:	
Evidence 1:	Evidence 2:

2. Now take the brain dominance quiz in your notebook. Respond to each scenario/question honestly. Once you conclude the questionnaire, review your results. Use the EEK! Strategy to draw a conclusion about your results.

Right/Left Brain Dominance Test

Which Side Are You On? In each pair of statements below, check either "A" or "B" to indicate the one that most accurately describes you.

1. ☐ **A** At home, my room has organized drawers and closets. I even try to organize other things around the house.
   ☐ **B** At home, I like the "lived-in" look. I clean as I see a need and when I have the time.
2. ☐ **A** My desk is usually clean and has everything in place.
   ☐ **B** I leave my work out on my desk so I can work as I am inspired by ideas.
3. ☐ **A** I like using the "tried and true" method.
   ☐ **B** I like creating new methods.
4. ☐ **A** I follow directions carefully when I build a model, make a craft, etc.
   ☐ **B** I like to build a model my way, making my own creation.
5. ☐ **A** I complete one project at a time.
   ☐ **B** I like to start many different projects, but do not like to finish them.
6. When I am asked to write a report on a subject, I.....
   ☐ **A** research information, then outline and organize my writing.
   ☐ **B** work in my own self-inspired direction.
7. When I had to do a project in class, I.....
   ☐ **A** used my parents' ideas, a book's illustrated project or modeled another student's project who received an "A+" from my teacher.
   ☐ **B** loved the challenge, and like a "mad scientist," I produced a unique project.
8. When I am in charge of a big job with many people working, I usually...
   ☐ **A** organize, give everyone their responsibilities, make lists, and make sure everyone finishes their part on time.
   ☐ **B** work at my own pace and let others work on the job as they want. I want to take care of needs/ problems as they arise.
9. Which of these activities would you like to do the most?
   ☐ **A** planning the details for a trip/project
   ☐ **B** creating an original art form
10. I hate it when other people.....
   ☐ **A** are indecisive about what activities to do when I am with them.
   ☐ **B** plan activities in step-by-step detail when I am with them.

Scoring the Left/Right Brain Test

Add the number of "A" responses.

Write the sum here. ☐

Add the number of "B" responses.

Write the sum here. ☐

If you have more "A" responses than "B" responses, then you are left-brained dominate.

This means you . . .

- are very rational
- analyze people and situations
- usually favor the subjects of math/science
- are methodical
- are a sequential thinker
- use logical reasoning
- like to work with things that can be seen or touched

If you have more "B" responses than "A" responses, you are right-brain dominate.

This means you . . .

- are very creative
- are usually emotional
- like to be different from others
- handle situations easily
- like to think abstractly
- enjoy the arts (music, art, drama)
- are a divergent thinker

What do you think it means if you had the same number of "A" and "B" responses?

FUN FACTS ABOUT YOUR "SIDES"

- The right side of your body is controlled by the left side of your brain.
- The left side of your body is controlled by the right side of your brain.
- Most people are left-brain dominate, even people who are left-handed writers.
- The left side of your brain controls speech, reading, writing, and math.
- The right side deals with spatial relationships, abstractions, and your feelings.

The Differences Between Right & Left Brain Thinking

Right-brain or creative thinkers gather information by feelings and intuition. This information is retained by using images and patterns and are able to visualize the whole idea as we gather our research.

The thought processes appear illogical and meandering because they are emotional, intuitive, abstract and laterally connected. Analysis of this information or problem-solving often involves free association and, while the solutions may be quite innovative, the route traveled to reach this conclusion would be impossible for a more rational left-brain thinker to follow. Visual thinkers do not use a step-by-step process to gather information — rather it is visually gathered all at once, which makes organization of this information and verbalizing the accumulated data, either in written or verbal form, difficult. Right-brain thinkers are best able to express themselves using art, music or dance.

Left-brain or critical thinkers collect information using logic and sense. This information is retained using words, numbers and symbols. Unlike right-brain thinkers, who see the whole concept, left-brain thinkers see only parts of the whole idea that guides them in their logical, step-by-step gathering of information. Their brain processes are deductive, rational, concrete and analytically connected. Left brain thinkers express themselves with concise words, numerical and written formulas, and technological systems.

Modern scientists know that your left brain is your verbal and rational brain while your right brain is your nonverbal and intuitive brain. We require special functions from both sides of our brains to accomplish most tasks in our daily lives. There are some nonverbal tasks — such as drawing, painting, dancing and music, in which our right brain excels and you'd be best to shelve your left-brain functions to prevent interference by your rational side. While most people can be categorized as left- or right-brain thinkers, there are exercises that can help you develop and nurture your intuitive side.

Evidence (fact from text) + **Evidence** (fact from text) + **Knowledge** (what the reader knows) = **Conclusion** (information about the text that is not said by the author)

E	E	K	!
Evidence from Text/ Test Results	Evidence from Text/Test Results	Reader's Knowledge	Conclusion

3. Let's add some personal touches to our brain dominance. Using the head silhouette, add at least five illustrations that make your brain dominance meaningful to you. Think of this as your personal brain dominance reflection or mirror.

Activity

2 Reading the Text

Reading Log: We will read together *Phineas Gage*, Chapter One, "'Horrible Accident' in Vermont," paragraphs one through three.

Was Phineas lucky or unlucky? Answer this question in the space below based on the short amount of material we have just read in class.

Continue reading through page 10, ending with "...just a matter of time now." As you read, complete the remainder of the graphic organizer.

Select five significant details from your reading that you feel are important to your understanding of the events in this part of the chapter. For each detail, list the page number on which it appears.	Based on the details you selected, write a three-sentence summary of the main idea of this part of Chapter One.
1. 2. 3. 4. 5.	

Activity

3 Steps in a Process

Read the article "What Happens in the Brain After a Concussion," which describes the process that occurs after a head injury. As you read, number the steps in the process the scientists at the National Institutes of Health studied to see what happens to the brain during a concussion. Then transfer those steps to the chart on the following page. The first step is included for you.

What Happens in the Brain After a Concussion

By Gretchen Reynolds | December 18, 2013 12:02 am | PHYS ED

Gretchen Reynolds on the science of fitness.

A remarkable recent experiment allowed scientists to see inside the skull and brain of animals that had just experienced a concussion, providing sobering new evidence of how damaging even minor brain impacts can be. While the results, which were published in Nature, are worrisome, they also hint at the possibility of treating concussions and lessening their harm.

Concussions occur when the brain bounces against the skull after someone's head is bumped or jolted. Such injuries are fairly common in contact sports, like football and hockey, and there is growing concern that repeated concussions might contribute to lingering problems with thinking or memory. This concern was heightened this week by reports that the brain of the late major league baseball player Ryan Freel showed symptoms of chronic traumatic encephalopathy, a degenerative condition. He reportedly had been hit in the head multiple times during his career.

But scientists did not know exactly what happens at a molecular level inside the brain during and after a concussion. The living brain is notoriously difficult to study, since it shelters behind the thick, bony skull and other protective barriers. In some earlier studies, scientists had removed portions of lab animals' skulls to view what happened to their brains during subsequent impacts. But removing part of the skull causes its own tissue damage and physiological response, muddying any findings about how the brain is affected by concussions.

So scientists at the National Institute of Neurological Disorders and Stroke, a division of the National Institutes of Health, decided to develop a less destructive means of seeing inside skulls and came up with the deceptively simple method of shaving away microscopic layers of a lab mouse's skull, thinning it to the point that powerful microscopic lenses could see through it, even as the skull remained essentially intact.

They then gently compressed a portion of the skull toward the brain, imitating (in reverse) the thumping that the brain endures when it strikes the skull during a concussive head injury, such as might occur after a jarring football tackle or if your head slams against the slope when you fall while skiing. Meanwhile, microscopic lenses positioned atop the animals' thinned skulls documented in real-time everything that subsequently occurred around and within the brain as a result of the concussion.

The brain is, in many ways, the body's best-protected organ. Besides the skull, it is shielded by multiple layers of membranes located just beneath the skull that block out harmful molecules. But, as the N.I.H. researchers saw, these membranes became slightly ripped and frayed by the force of the concussion, leaving them leaky and the brain potentially vulnerable to the influx of molecules.

And such molecules soon appeared. "We saw a very quick build-up of reactive oxygen species" in the space between the skull and the brain after the concussion, said Dorian B. McGavern, a senior N.I.H. investigator who oversaw the study. Reactive oxygen species, which are also called free

radicals, are known to play a role in various normal tissue processes, including the inflammatory response to any injury, but in excess they can contribute to cell death and tissue damage.

In the case of concussion, the body mounted a brave repair campaign, sending specialized immune cells from the blood and the brain to patch and fill in the frayed membranes. But the process was too slow, allowing an excess of free radicals to pass through the weakened membranes and migrate into the brain tissue, where they soon caused the death of brain cells far from the original impact site.

While concerning, this development also suggested to the scientists the possibility of treatment. If they could reduce the number of free radicals clustering near the brain, they reasoned, they could lessen the subsequent damage. So, in follow-up experiments, they inserted large amounts of a powerful antioxidant into the space between the animals' skull and brain. Antioxidants soak up free radicals and, it turned out, dramatically blunted the trauma associated with impacts to the brain. In animals that received the treatment immediately after a concussion, almost 70 percent fewer brain cells died than in untreated mice.

These findings are "promising and intriguing," Dr. McGavern said, although they are extremely preliminary and, for now, applicable only to mouse brains, not those of humans. But he and his N.I.H. colleagues are mounting a number of follow-up experiments to learn more about what precisely happens inside a concussed brain and how potentially to treat the injury. They are, for instance, looking at whether antioxidant patches applied to the scalp might be as effective at reducing concussion-related brain-cell death as more invasive approaches. Results should start rolling in next year.

Steps In The Process Of A Concussion
Step 1 Scientists created microscopic layers of a mouse's skull so thin that they could be seen through a microscopic lens.
Step 2
Step 3
Step 4
Step 5
Step 6

Based on the steps you identified, what can you infer about the consequences of concussion?

Now revisit page 3 in *Phineas Gage* where the author describes the process Phineas follows for blasting. List the steps he follows when creating a blast.

Phineas' Steps In The Process Of A Creating A Blast
Step 1
Step 2
Step 3
Step 4
Step 5
Step 6
Step 7 Light the fuse.
Step 8 Run fast.

Based on the steps you identified, what can you infer about the nature of this process?

Activity

4 Examining the Prompt for the Presentation

Examine the prompt for the presentation below. Read through the assignment description and presentation task sheet.

How do conditions of the brain affect us emotionally, physically, and intellectually?

> After reading *Phineas Gage: A Gruesome but True Story About Brain Science* and other informational texts on brain research, write an oral presentation in which you explain physical, emotional, or intellectual conditions of the brain and relate the information to how the brain works. Support your discussion with evidence from the texts.

Guiding Task: You are responsible for researching, creating, and giving a presentation that explains physical, emotional, or intellectual conditions of the brain and that should enable your audience to learn how these conditions affect us. Your driving question is "How do conditions of the brain affect us emotionally, physically, and intellectually?"

Use the chart below to ensure that your presentation meets the criteria in the left column.

Criteria	Pre-Planning/Checklist
1. Approved topic	
2. Valid research consisting of three sources	
3. Appropriate presentation method (Power point, Prezi, etc.)	
4. Attractive and consistent formatting	
5. Information that addresses the specific audience	

Here is the rubric for the task so that you know how you will be graded.

Student Work Rubric - Informational/Explanatory Task - Grades 6-8.							
Scoring Elements	**Emerging**		**Approaches Expectations**		**Meets Expectations**		**Advanced**
	1	1.5	2	2.5	3	3.5	4
Controlling Idea	Attempts to address the prompt. Presents an unclear or unfocused controlling idea.		Addresses the prompt appropriately. Presents a general controlling idea with an uneven focus.		Addresses all aspects of the prompt appropriately. Presents a clear controlling idea.		Addresses all aspects of the prompt appropriately. Presents a clear and specific controlling idea that takes into account the complexity of the topic.
Development/ Use of Sources	Refers to details from sources, but there are irrelevant, incomplete, or inaccurate elements.		Includes relevant details, examples, and/or quotations from sources to support the controlling idea, with minimal explanation.		Accurately explains relevant details, examples, and/ or quotations from sources to support and develop the controlling idea.		Thoroughly and accurately explains well-chosen details, examples, and/ or quotations from sources to effectively support and develop the controlling idea.
Organization	Lacks an evident structure. Makes unclear connections among ideas, concepts, and information.		Uses an evident organizational structure to develop the controlling idea. Attempts to use transition words to connect ideas, with minor lapses in coherence or organization.		Uses an appropriate organizational structure to develop the controlling idea. Uses transitional phrases to clarify the relationships among ideas, concepts, and information.		Maintains an appropriate organizational structure that creates cohesion. Uses varied syntax and transitional phrases that clarify the precise relationships among ideas, concepts, and information.
Conventions	Lacks control of grammar, usage, and mechanics. Uses inappropriate language or tone. Rarely or never cites sources.		Demonstrates an uneven command of standard English conventions. Uses language and tone with some inaccurate, inappropriate, or uneven features. Inconsistently cites sources.		Demonstrates a command of standard English conventions, with few errors. Uses language and tone appropriate to the audience and purpose. Cites sources with minor formatting errors.		Demonstrates and maintains a well-developed command of standard English conventions, with few errors. Consistently uses language and tone appropriate to the audience and purpose. Cites sources using an appropriate format.

Now that you have reviewed the prompt and the task sheet, answer the following questions:

1. What kind of ideas and thoughts do you have in response to this prompt?

2. What have you seen so far in Fleischmann's text or in the other texts you have read that seems to connect to this prompt and task?

Activity

5 Annotating Text

In this activity, you will annotate and discuss a small passage from the first chapter of *Phineas Gage*. Using the six symbols provided on the handout below, mark each symbol, adding its corresponding notes in the margins or between lines. Feel free to use a dictionary or thesaurus to assist you. As you are annotating your personal copy, add a few of your annotations to the class copy projected by the ELMO/projector. You may wish to use different colored pens or highlighters to assist with annotating.

Annotating Symbols with Actions

Symbol	Meaning/Action	Symbol	Meaning/Action
Underline	Underline phrases or a sentence that stands out as interesting or important. Why do you think this is worth 'carrying' through the text?	Text to Self – **TS**	Place a TS next to characters or events in which you can relate. Arrow out and explain connection.
Circle	Circle unfamiliar words/ phrases; define in margin.	Text to Text- **TT**	Place a TT to connect this text to another text (anything that is interpreted for meaning). Arrow out and explain the connection.
Question Mark	Place a question mark next to passages you do not understand or want to further examine. In the margin, write your specific question about the text.	Text to World- **TW**	Place a TW next to connect your reading to a world event/issue in the past or present. Arrow out and explain the connection.

Passage to Annotate

"Dr. Harlow does what he can. He cleans the skin around the hole, extracts the small fragments of bone, and gently presses the larger pieces of skull back in place. He looks inside Phineas's mouth. He can see the hole where the iron passed upward through the roof of his mouth. Dr. Harlow decides to leave the hole open so the wound can drain. Then Dr. Harlow "dresses" the wound, pulling the loose skin back into position and taping it in place with adhesive strips. He puts a compress bandage directly over the wound and pulls Phineas's nightcap down tightly over it. Finally he winds a roller bandage around his forehead to hold all the bandages securely. Only then does he notice Phineas's hands and forearms, which are black with powder burns. Dr. Harlow dresses the burnt skin and has Phineas put to bed with head elevated. He gives strict orders that his patient is to remain in that position.

Phineas should have been dead long before this. A thirteen-pound iron rod through the head should kill a person instantly. Surviving that, he should have died of shock soon after reaching Cavendish. He's lost a lot of blood, yet he remains awake and talkative. Even surviving the loss of blood, Phineas should have died from brain swelling. Any hard blow to the body causes injured tissue to swell. The brain is soft, and the skull is hard. A bard blow to the head can rattle the brain around inside like a BB in a tin can. The rattling bruises the brain, and bruised tissue swells. The brain swells, but the skull stays the same size; a swollen brain can jam itself so tightly it will cut off its own blood supply. This swelling can choke off oxygen to parts of the brain long enough to cause permanent damage. It can also cause death."

Using discussion question stems below, compose two questions that can be used in a class discussion; you can also create your own questions. Just remember that discussion questions require more than a '"Yes" or "No" response and can elicit varying responses from the group. After you have composed your questions, we will take volunteers to open their questions to the class.

Discussion Question Stems

- Based upon the annotation " ", describe how this could change the reader's impression of Phineas.
- What additional meaning does the " " annotation add to the passage?
- Describe or predict the reader's purpose for adding " " annotation.
- Explain how " " annotation helps the reader find relevance in the passage.

Now compose two discussion questions in the space below:

Activity

6 Parallel Structures

In this activity, you will learn to identify parallel structures in a sentence. By identifying these structures and the way a writer uses them to convey meaning or to emphasize points, and by practicing writing sentences using parallelism, you will develop the ability to write clear and balanced sentences. Additionally, you will be expected to use parallelism in the final writing piece for the unit.

Look at this sentence from page 3 of *Phineas Gage*. Label the following parts of the sentence: subject, predicate, and phrases.

> All day, Phineas must keep an eye on his drillers to make sure they stay ahead.

Now look at the sentence that follows that one:

> All day, Phineas must keep an eye on his diggers to make sure they keep up.

Identify the subject, predicate, and phrases. Which parts are the same as the previous sentence?

Now read the following sentences and underline the parts that are parallel.

1. The most dangerous forms of transportation are bicycles, cars, and motorcycles.

2. Mary's mother told her to clean her room and to go to the store.

3. Mr. Warner asked Jenna to hand in her paper and to hand in her book report.

4. Paula liked to take long walks on the beach and to collect pretty shells.

5. Many people share the same three fears: making speeches, being in high places, and dealing with numbers.

You will now apply what you have learned to a passage from *Phineas Gage*. In the passage below, highlight any sentence that you believe uses parallelism. Next, underline the parallel parts of those sentences.

> "They follow a strict routine. His assistant 'charges' each new hole by filling the bottom with coarse-grained gunpowder. Phineas uses the narrow end of his iron to carefully press the ropelike fuse down into the powder. The assistant then fills up the rest of the hole with loose sand to act as a plug. Phineas will tamp the sand tight to bottle up the explosion, channeling the blast downward into the rock to shatter it. While his assistant is pouring the sand, Phineas flips his tamping iron around from the pointy end to the round end for tamping. When it's damp, nothing will set it off. When it's too dry or mixed in the wrong formula, almost anything can set it off, without warning. But Phineas and his assistant have done this a thousand times – pour the powder, set the fuse, pour the sand, tamp the sand plug, shout a warning, light the fuse, run like mad."

Activity

7 One Event, Two Accounts

Now that you have read author John Fleischman's researched version of Phineas' accident, we are going to analyze a newspaper account from 1848. Listen and follow along as I read the newspaper account to you. Then you will use this article to complete a group activity.

> Horrible Accident – As Phineas Gage, a foreman on the railroad in Cavendish, was yesterday engaged in tamping for a blast, the powder exploded, carrying an iron instrument through his head an inch and a fourth in circumference, and three feet and eight inches in length, which he was using at the time. The iron entered on the right side of his face, shattering the upper jaw, and passing back of the left eye, and out at the top of the head.
>
> The most singular circumstance connected with this melancholy affair is, that he was alive at two o'clock this afternoon, and in full possession of his reason, and free from pain. – Ludlow, Vt., Union.

Activity

8 A Modern-Day Phineas

Now that we have studied the series of unfortunate (or perhaps fortunate) events that led to Phineas' brain injury, let's take a look at a modern day Phineas. In 2012, a man by the name of Eduardo Leite would make the news for escaping paralysis by mere millimeters.

Begin by conducting a highlighted reading of the CBS News article below. Assign a highlighter color for each item: Who, What, Where, When, Why, and How. Independently read and highlight your article.

> (AP) RIO DE JANEIRO - Doctors say a 24-year-old construction worker survived after a 6-foot metal bar fell from above and pierced his skull.
>
> Luiz Alexandre Essinger, chief of staff at Rio de Janeiro's Miguel Couto Hospital, said doctors successfully withdrew the iron bar from Eduardo Leite's skull during a five-hour surgery.
>
> "He was taken to the operating room, his skull was opened, they examined the brain and the surgeon decided to pull the metal bar out from the front in the same direction it entered the brain," Essinger said.
>
> He said Leite was conscious when he arrived at the hospital and told him what had happened. He is lucid and shows no negative consequences after the operation. Essinger said Friday that "it really was a miracle" that Leite survived.
>
> "Today, he continues well, with few complaints for a five-hour-long surgery," Essinger said. "He says he feels little pain."
>
> The bar fell from the fifth floor of a building under construction, went through Leite's hard hat, entered the back of his skull and exited between his eyes, Essinger said, adding: "It really was a miracle" that Leite survived.
>
> The accident and surgery took place on Wednesday.
>
> "They told me he was lying down (in the ambulance) with the bar pointing upward," said Leite's wife, Lilian Regina da Silva Costa. "He was holding it and his face covered in blood. His look was as if nothing had happened. When he arrived he told the doctors he wasn't feeling anything, no pain, nothing. It's unbelievable."
>
> Ruy Monteiro, the hospital's head of neurosurgery, told the Globo TV network that Leite escaped by just a few centimeters from losing one eye and becoming paralyzed on the left side of his body.
>
> He said the bar entered a "non-eloquent" area of the brain, an area that doesn't have a specific, major known function.
>
> Leite is expected to remain hospitalized for at least two weeks.

Using the graphic organizer below, illustrate Phineas' injury as well as Leite's injury, side-by-side.

Graphic Organizer

PHINEAS GAGE	EDUARDO LEITE

Now, let's fill in the individuals' case specifics in the corresponding columns of the comparison. You may do this with your case study partner. For Phineas's side, please remember to cite information from the text by quoting sentences and including page numbers.

Criteria	*Phineas Gage*	Similarities	Differences	*Eduardo Leite*
Description of Injury				
Context of Injury (Where, When, How)				
Patient's Reaction to Injury				
Medical Attempts to Treat Injury				
Potential Outcomes of Injury				
Other				

Lesson 2

It Takes A Village to Study the Brain

In this lesson you will

- Actively read informational text, highlighting key terms.
- Compare central ideas in two informational texts.
- Compose writing that uses domain-specific vocabulary from informational texts, cite informational texts within that writing, and compare ideas presented in informational texts.
- Work collaboratively to read texts and employ active reading strategies.
- Research domain-specific ideas from texts.
- Collaborate on mini presentations to whole-class audiences.

Activity

1 All Together Now Informational Text Reading and Summaries

How can the science community help Phineas? Well, how much right now. During our community reading of pages 10 to 15 in our text, we will learn the stance of science at the time regarding Phineas' injury.

In the T-Chart below, as you are reading, make a list of five words or phrases that could be considered key to understanding the text. Put those words on the left side of the T-Chart.

***Phineas Gage* (pgs. 10-15)**	**"Antibiotics Can't Keep Up With 'Nightmare' Superbug"**

In the portion of text we read in *Phineas Gage*, we learned how science was developing regarding some of the medical issues that Phineas is encountering or may encounter during his time. In this article about antibiotics, we connect the bridge between Phineas' time and our time in regard to some of the same science concerns. With your partner/group, alternate reading the highlights of an interview with David Hoffman, a contributing editor for *The Washington Post*, which aired on National Public Radio. When you finish, write as many words or phrases from the interview that represent key ideas/main points as you can find; write these on the right side of the T-chart.

Antibiotics Can't Keep Up With 'Nightmare' Superbug

We're used to relying on antibiotics to cure bacterial infections. But there are now strains of bacteria that are resistant to even the strongest antibiotics, and are causing deadly infections. According to the CDC, "more than 2 million people in the United States every year get infected with a resistant bacteria, and about 23,000 people die from it," journalist David Hoffman tells Fresh Air's Terry Gross.

Many people are familiar with the type of resistant infections often acquired in hospitals, caused by MRSA, the acronym for methicillin-resistant Staphylococcus aureus. But most people don't know about the entirely different group of resistant bacteria that Hoffman reports on in "Hunting the Nightmare Bacteria," airing Tuesday on PBS' Frontline. The show explores an outbreak of resistant bacteria at one of the most prestigious hospitals in the U.S., and explains why there is surprisingly little research being conducted into new antibiotics to combat these new superbugs.

"We really have a big information black hole about these really, really dangerous bacteria, and we need to know more, and it ought to be a national priority," Hoffman says.

On how bacteria have evolved to be resistant to our antibiotics

Bacteria have been training at this for a long, long time. I think when a lot of people took antibiotics in the '50s and '60s, there was a lot of talk then about "miracle drugs" and "wonder drugs" ... Had we basically pushed back those evolutionary forces? Had we essentially found a way to avoid infectious disease? Well, what we're seeing is this evolutionary process in bacteria. It's relentless, and what happened here was [that] bacteria learned to basically teach each other to swap these enzymes and help each other learn how to beat back our best antibiotics; our last-resort antibiotics didn't work. ...

In the period before World War II ... people that got infections, they had to cut it out. They had to cut off limbs, cut off toes, because there weren't antibiotics. And oftentimes, when people talk about the fact that we might have to go back to a pre-antibiotic age, that's what they mean — that a simple scrape on the playground could be fatal.

On what's unique about these new strains of bacteria that makes them resistant to antibiotics

One feature of [some antibiotic-resistant] bacteria is that they have kind of a hard armor around them, a shell, which protects them from antibiotics. They also have the ability to pump out the antibiotics or to basically chew it up inside. These ... are very, very difficult to treat; you just don't have antibiotics for them. ...

NDM-1 [an enzyme that makes bacteria antibiotic-resistant] has a very, very unusual but worrisome characteristic, and that is this: It has a mechanism to transfer its genes — its genetic material — which helps it resist antibiotics. It can transform that to other bugs. It can walk around like a coach, giving training and directions to other bacteria ... helping other bacteria become resistant to antibiotics ... teaching them how to do it. ...

NDM-1 is now spreading in the United States. ... There have been 16 cases, and the year before the numbers doubled in a year. You know, it's not an epidemic or anything, but these things are popping up now with more and more frequency in hospitals and in patients around the United States. It's here.

On the bacterial outbreak at the National Institutes of Health Clinical Center and how it spread

This clinical center is a very sophisticated research hospital. Patients are invited there because of research programs going on in the many different institutes of the National Institutes of Health. It's not a hospital you walk into with a sore throat.

They had enrolled and invited a patient from New York, a woman who had had a major operation, and she was invited for a particular study that they needed to do. When they came they looked at her chart, and they had no warning, but the chart said that this woman had this drug-resistant bacteria ... which they had never seen before. This is a resistant [bacteria] called KPC; it's resistant to some of our most modern, last resort ... antibiotics. They did what they could to prevent this bacteria from spreading. They put her in what's called "enhanced contact isolation." Gloves and gowns for everybody, put her at the end of the ICU in her own room, and they went through with the research they had to do. And after a month ... she seemed to survive it; she was discharged. Everybody at the clinical center breathed a sigh of relief. ...

The first thing that they thought was: Maybe it's just in the environment, maybe it was on door handles, maybe it was on a doctor's hands or gloves. ... So they began to clean a lot of things. ... They did everything they could to bleach and clean and make sure they could stop it and they still didn't stop it; it started to continue to spread.

Then there was a couple weeks of quiet. And then a really, really, surprising thing happened. This particular bacteria started to show up in other patients in routine surveillance of the patients. Suddenly, in the microbiology lab they're beginning to see this thing, and none of these other patients had any contact with the first one. ... So where was this bug? Where was the mechanism that it was moving around? And that was a real crisis. ...

So they went through a series of phases of this war that they carried out to try to deal with this. The first thing that they thought was: Maybe it's just in the environment; maybe it was on door handles; maybe it was on a doctor's hands or gloves. ... So they began to clean a lot of things. ... They did everything they could to bleach and clean and make sure they could stop it, and they still didn't stop it; it started to continue to spread. ...

[They approached a team of genomics specialists, and] the people in genomics had some very tentative early experience of taking a bacteria and taking a look at its entire genetic blueprint. ... So they took a couple samples of this bug that was racing around ... and they started running it through the computers. It takes a while, it took a couple of weeks, but when they got the results back, everybody was completely stunned. ... The results showed that the bug had jumped from patient No. 1 to several other people, and it had jumped by being carried by people who didn't get sick from it. They found out that there were intermediaries, or silent carriers, that were spreading it around. To this day we don't know [if] the silent carriers were other patients [or] hospital workers. They began to see that this wasn't so much a problem of KPC being in the environment as it was people were moving it around.

Now circle and draw connecting lines to those similar words or phrases.

Let's compare the information in these texts. Remember, comparing is when you note the differences and similarities of two or more items. Using your T-chart and circled items, compose a paragraph using the template, comparing the advancements of science in Phineas' time to our time. Use the key words/ phrases that you collected from your readings; be sure to cite your information.

Paragraph Template

3.8 Paragraph Template	Your Sentence
First Sentence: Introduction; 3 sub-topics	
Second/Third Sentences: First example/evidence with support	
Fourth/Fifth Sentences: Second example/evidence with support	
Sixth/Seventh Sentences: Third example/evidence with support	
Eighth Sentence: Conclusion (reiterate introduction sentence)	

Activity

2 Limelight Science Presentations

Limelight Presentation Task Sheet/Graphic Organizer

When one is in the limelight, so to speak, he or she is the center of attention. With this activity, your group will be assigned a topic of importance from *Phineas Gage* that needs to be carried through the reading of the text. So, your group will take the lime light as experts of that topic.

What does your presentation need? First and foremost, all members of the group must speak during the group's time in the limelight. In addition, your quad must address the following topics in relation to your concept:

- Definition(s) of any vocabulary/terms; connect to text
- Informative explanation of term/concept as it applies to *Phineas Gage*
- Visual of concept/term to assist in comprehension
- Discussion question for the class to answer (be able to provide a correct response).
- Research (using credible website sources) and design/draft your portion of the presentation below.

Lime Light Concept:

Definitions with Connections to Text	Informative Explanation (as it applies to Phineas Gage)
Potential Visual	**Discussion Question/Possible Responses**

Cloze Notes Guide

Complete the following paragraph for each group that presents.

Group members:

During this group's presentation, (topic) was discussed.

The group mentioned several terms or people worth nothing; for example, they introduced

(term/person) which means/who contributed by .

Another term/person discussed was ;

this means/they contributed by .

The group also used a visual that represented ;

this furthered the topic by .

By means of a discussion question, the group helped the class understand

.

Group members:

During this group's presentation, (topic) was discussed.

The group mentioned several terms or people worth nothing; for example, they introduced

(term/person) which means/who contributed by .

Another term/person discussed was ;

this means/they contributed by .

The group also used a visual that represented ;

this furthered the topic by .

By means of a discussion question, the group helped the class understand

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Group members:

During this group's presentation, (topic) was discussed.

The group mentioned several terms or people worth nothing; for example, they introduced

(term/person) which means/who contributed by .

Another term/person discussed was ;

this means/they contributed by .

The group also used a visual that represented ;

this furthered the topic by .

By means of a discussion question, the group helped the class understand

.

Group members:

During this group's presentation, (topic) was discussed.

The group mention

(term/person) which means/who contributed by .

;

this means/they contributed by .

The group also used a visual that rep ;

this furthered the topic by .

By means of a discussion question, the group

.

Group members:

During this group's presentation (topic) was discussed.

The group mentioned several terms or people worth nothing; for example, they introduced

(term/person) which means/who .

Another term/person discussed was ;

.

The group also used a visual that represented ;

this furthered the topic by .

By means of a discussion quest

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Lesson 3
A Basis for Comparison

In this lesson you will

- Read pages 15-22 of the central text and complete a reading log based on those pages.
- Read and annotate a primary source document and then compare and contrast its content to information in the central text to understand the role that audience and purpose play in informational text.
- Read and discuss informational text in order to better understand the nature of Phineas' injury.
- Apply strategies for locating words in an informational text that are unfamiliar to you and determine the meaning of those words, using both context clues and dictionaries.

Activity

1 Gathering Details

Read pages 15-22 of *Phineas Gage*. Complete the graphic organizer below.

Select five significant details from your reading that you feel are important to your understanding of the events in this part of the chapter. For each detail, list the page number on which it appears.	Based on the details you selected, write a three-sentence summary of the central idea of this part of Chapter One.
1. 2. 3. 4. 5.	

Activity 2

Comparing Two Accounts

Read the excerpt from the letter "Passage of an Iron Rod Through the Head," which is written from Dr. Harlow's point of view. As you read, use the annotating skills you have learned to identify important information that Dr. Harlow shares with the editor of the Boston Medical and Surgical Journal. You will be comparing this text to the central text in terms of the details each text shares about Phineas' accident. Look specifically for information about the accident itself and the medical treatment immediately after.

To the Editor of the Boston Medical and Surgical Journal.

Dear sir,—Having been interested in the reading of the cases of "Injuries of the Head," reported in your Journal by Professor Shipman, of Cortlandville, N.Y., I am induced to offer you the notes of a very severe, singular, and, so far as the result is taken into account, hitherto unparalleled case, of that class of injuries, which has recently fallen under my own care. The accident happened in this town, upon the line of the Rutland and Burlington Rail Road, on the 13th of Sept. last, at 4½ o'clock, p.m. The subject of it is Phineas P. Gage, a foreman, engaged in building the road, 25 years of age, of middle stature, vigorous physical organization, temperate habits, and possessed of considerable energy of character.

It appears from his own account, and that of the by-standers, that he was engaged in charging a hole, preparatory to blasting. He had turned in the powder, and was in the act of tamping it slightly before pouring on the sand. He had struck the powder, and while about to strike it again, turned his head to look after his men (who were working within a few feet of him), when the tamping iron came in contact with the rock, and the powder exploded, driving the iron against the left side of the face, immediately anterior to the angle of the inferior maxillary bone.

I am informed that the patient was thrown upon his back, and gave a few convulsive motions of the extremities, but spoke in a few minutes. His men (with whom he was a great favorite) took him in their arms and carried him to the road, only a few rods distant, and sat him into an ox cart, in which he rode, sitting erect, full three quarters of a mile, to the hotel of Mr. Joseph Adams, in this village. He got out of the cart himself, and with a little assistance walked up a long flight of stairs, into the hall, where he was dressed.

Being absent, I did not arrive at the scene of the accident until near 6 o'clock, p.m. You will excuse me for remarking here, that the picture presented was, to one unaccustomed to military surgery, truly terrific; but the patient bore his sufferings with the most heroic firmness. He recognized me at once, and said he hoped he was not much hurt. He seemed to be perfectly conscious, but was getting exhausted from the hemorrhage, which was very profuse both externally and internally, the blood finding its way into the stomach, which rejected it as often as every 15 or 20 minutes. Pulse 60, and regular. His person, and the bed on which he was laid, were literally one gore of blood. Assisted by my friend, Dr. Williams, of Proctorsville, who was first called to the patient, we proceeded to dress the wounds. From their appearance, the fragments of bone being uplifted and the brain protruding, it was evident that the fracture was occasioned by some force acting from below upward. The scalp was shaven, the coagula removed, together with three small triangular pieces of the cranium, and in searching to ascertain if there were other foreign bodies there, I passed in the index finger its whole length, without the least resistance, in the direction of the sound in the cheek, which received the other finger in like manner. A portion of the anterior superior angle of each parietal bone, and a semi-circular piece of the frontal

bone, were fractured, leaving a circular opening of about 3½ inches in diameter. This examination, and the appearance of the iron which was found some rods distant, smeared with brain, together with the testimony of the workmen, and of the patient himself, who was still sufficiently conscious to say that "the iron struck his head and passed through," was considered at the time sufficiently conclusive to show not only the nature of the accident, but the manner in which it occurred.

10, p.m., same evening.—The dressings are saturated with blood, but the hemorrhage appears to be abating. Has vomited twice only since being dressed. Sensorial powers remain as yet unimpaired. Says he does not wish to see his friends, as he shall be at work in a day or two. Tells where they live, their names, &c. Pulse 65; constant agitation of the lower extremities.

Now re-read pages 15–19 in the central text, beginning with the paragraph that begins "None of the progress…" and ending with "…to regain his full powers." Pay close attention to the specific details that recount Dr. Harlow's actions and Phineas' behavior.

Now complete the chart below.

List five details that are included in Dr. Harlow's account in the *Bulletin of the Massachusetts Medical Society* that are not in the Fleischman text:		
Identify each writer's purpose and audience.	Fleischman	Harlow
Purpose		
Audience		

Considering his audience and purpose, why do you think Fleischman left these details out of his text? Why did Harlow include them?

How do these additional details impact your understanding of the central text?

Activity
3 A Deeper Understanding

Read the excerpt from the article "Frontal Lobe Dsyfunction Explains Some Behaviors, Doctors Told." Then, complete the graphic organizer that follows.

Wednesday, November 21, 2007
Connie Jo Discoe

As endearing as some of the behaviors may seem to outsiders, the symptoms of "frontal lobe dysfunction" often bring caregivers to tears.

Frontal lobe dysfunction, or executive dysfunction syndrome – EDS – or "vulnerable brain," or "Pick's disease" causes changes in personality and behavior and erases inhibitions. Victims make poor decisions and do not anticipate the consequences of their sometimes strange, socially unacceptable actions. "If it feels good, do it," is typical of a victim of frontal lobe dysfunction, Dr. Steven Wengel told a group of McCook doctors when he and Dr. Carl Greiner, of the University of Nebraska Medical Center, stopped in McCook Nov. 8.

"This is not Alzheimer's disease," Dr. Wengel said. Victims' cognition and memory are good, he said; they know what they've done – they remember doing it. They just don't know it's inappropriate, or that they have frontal lobe dysfunction.

The syndrome has been around for years, Dr. Wengel said, telling the tale of Phineas Gage, not an old gentleman, who in the 1840s, suffered frontal lobe damage when a three-foot-long iron rod was blown through his head. Amazingly, he recovered from that accident, but within weeks he became uncharacteristically obstinate, sexually inappropriate and childlike. Records indicate "he just wasn't himself," Dr. Wengel said. Phineas Gage was unable to hold a job due to his socially-inappropriate behavior, and died 11 years later.

"A patient with executive dysfunction generally does not know that he has it," Dr. Wengel said. "No one ever comes to me and says, 'I think I have bad judgment. Help me with this'."

"We're seeing this now in victims of car accidents and skateboard accidents," Dr. Wengel said, and in soldiers suffering closed-head brain trauma caused by explosions and bombings.

Normal development of the brain's executive function is a gradual process starting in the pre-teen years through the 20s (" ... or never," Dr. Wengel said. "Not everyone gets here.")

Good frontal lobe function is evidenced by the ability to make decisions, many unconsciously. Even subtle impairment will show in poor decision-making skills and a lack of awareness of consequences.

Abnormal frontal lobe function manifests itself slowly, and early on with a loss of personal and social awareness, insight and disinhibition.

Typical behavioral problems include:

- Socially inappropriate behavior, such as making tactless comments, sexually inappropriate jokes, comments, suggestions and/or requests;
- Aggressive behavior, (for example, becoming easily angered while driving);
- Hoarding; and
- Shoplifting.

Physical signs will include:

• Early, primitive reflexes and incontinence; and

• Late, akinesia (absence or disturbance of motion in a muscle); rigidity; tremor; or low blood pressure.

Dr. Carl Greiner MD, a UNMC professor of psychiatry, practices adult and forensic psychiatry and deals with issues of cognitive impairment and how it can result in legal problems.

Dr. Greiner studies psychiatry and the law, asking, "Is someone with EDS (executive dysfunction syndrome) culpable?"

EDS is hard to recognize, Dr. Greiner said. Victims are, "mentally rigid. The lights are on, but nobody's home. They seem OK, but they're not."

"Victims can get into trouble," he explained, "because their concept of 'the right time and place' is disrupted."

Everyone has a bit of executive dysfunction, Dr. Greiner said, explaining that phonics in the third grade made absolutely no sense to him. But, someone who has had good executive brain function and is now losing it will not function as well as in the past, he said.

"You don't seem like yourself," may be the comment made to an EDS sufferer, Dr. Greiner said.

Someone with EDS is a risk to him/herself, becoming easily befuddled by simple tasks – such as tripping because they've forgotten to lift their feet to walk up a flight of stairs, or getting burned by forgetting the process of pouring hot coffee, Dr. Greiner said.

"Early on, symptoms of EDS are illusive ... they're tough to pin down," he said. There is a battery of paper-and-pencil tests that a suspected victim can be put through, including being asked to draw the face of a clock. Planning ahead to fit 12 items equidistance within a circle is a function of good frontal lobe function, he said. An EDS victim often bunches all the numbers together or only makes it halfway around before he/she runs out of numbers. One victim actually drew facial features on a clock, Dr. Wengel said.

Dr. Wengel said there is at times an overlap between short-term memory loss and frontal lobe dysfunction. "On any given day, any one of us can have some degree of frontal lobe dysfunction," he said.

"Frontal lobe dysfunction is a real challenging syndrome to pin down," he said.

Refer to pages 19-22 of your text. Make a list in the table below of Phineas' behaviors. Then, in the other column, make a list of behaviors listed in the article. Be sure to look not only at the bulleted list but at the quotes from Dr. Wengel and Dr. Greiner. Then, answer the questions at the bottom of the table.

Phineas' Behaviors	Behaviors Listed in the Article
What behaviors do people with frontal lobe damage have that are similar to Gage's strange behavior?	
How does this article help us understand what Gage's doctors did not understand?	

Activity

4 Vocabulary

Choose ONE of the words from the list in the box below and ONE unfamiliar word from "'Horrible Accident' in Vermont." For each of your words, complete the chart below. Remember to use the context of the word (the sentence in which it is found) to help you understand the dictionary definition.

Choice words and the page numbers on which they can be found:

foreman p.1
forge p.3
laterally p.8
dresses p.9
delirious p.10
fundamental . . . p.11
gangrene p.13
colonize p.13
array p.13
carbolic acid . . . p.15
imbalance p.17
intrigued p.20
vulgar p.20
irreverent p.22
deference p.22

Word from the list (all):	Rate My Understanding (check one): ☐ Know It ☐ Sort of Know It ☐ Don't Know It at All
My Guess on Meaning:	
Dictionary Definition (include the part of speech):	
Context (the sentence in which the word appears and the page number):	
Does the dictionary definition fit the context of the word? If not, what definition does fit? What clues are in the sentence to help you understand the meaning of the word from context?	
Restate or explain the new word in your own words:	Create a representation of the word (a picture or symbolic representation):

Word from the list (all):	Rate My Understanding (check one): ☐ Know It ☐ Sort of Know It ☐ Don't Know It at All
My Guess on Meaning:	
Dictionary Definition (include the part of speech):	
Context (the sentence in which the word appears and the page number):	
Does the dictionary definition fit the context of the word? If not, what definition does fit? What clues are in the sentence to help you understand the meaning of the word from context?	
Restate or explain the new word in your own words:	Create a representation of the word (a picture or symbolic representation):

Read pages 23-34 of *Phineas Gage*. Complete the graphic organizer below.

Select five significant details from your reading that you feel are important to your understanding of the events in this part of the chapter. For each detail, list the page number on which it appears.	Based on the details you selected, write a three-sentence summary of the central idea of this part of Chapter One.
1. 2. 3. 4. 5.	

Lesson 4
The Nitty Gritty of the Brain

In this lesson you will

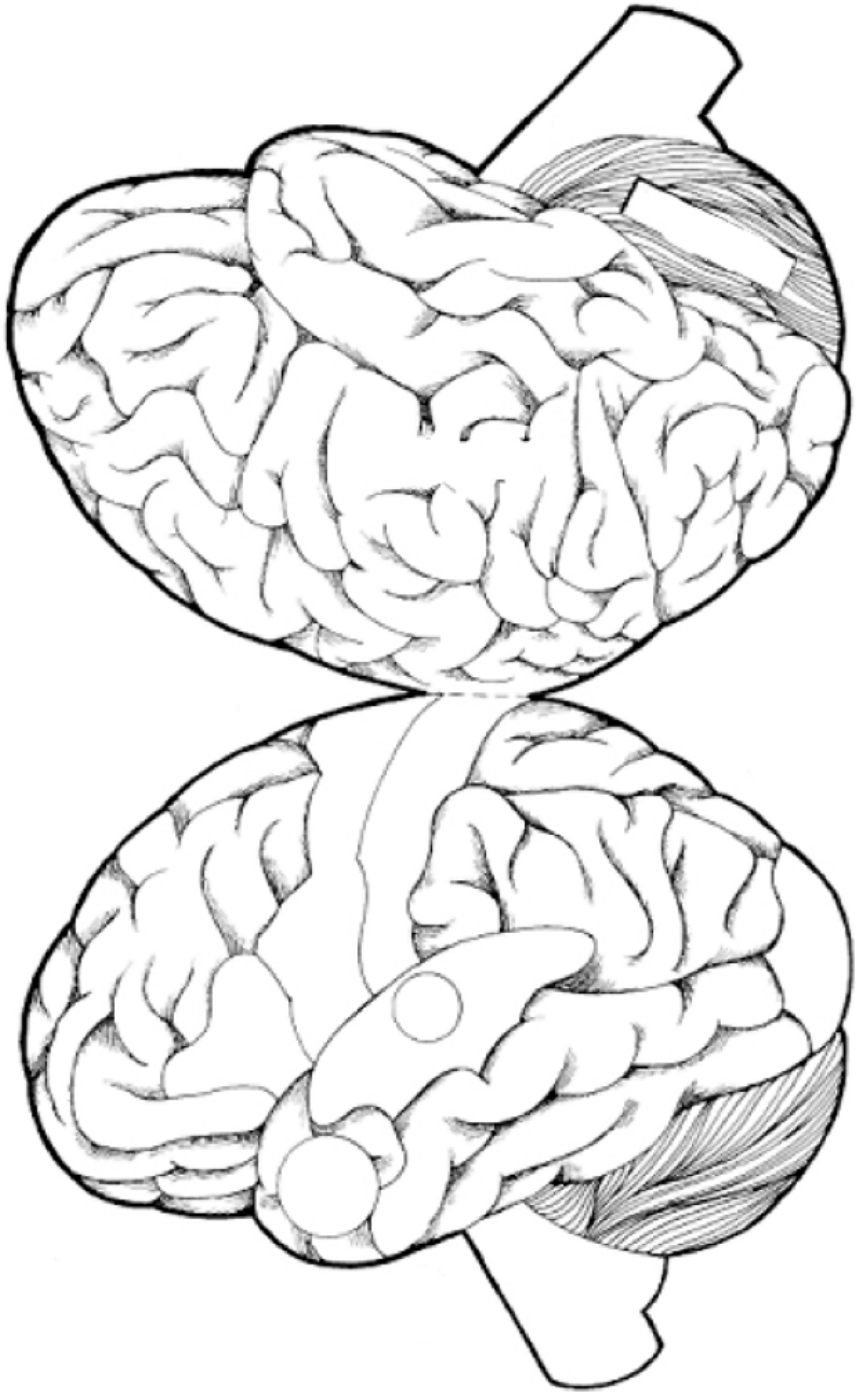
- Actively read informational texts using graphic organizers.
- Compose working definitions to be used in discussion and writing tasks.
- Locate parts of the brain using a graphic organizer and kinesthetic game.
- Actively watch short pieces of media using listening guides to record information.
- Read pages 23-34 of the central text and complete a reading log for those pages.
- Learn the term “analogy” and be able to compose an analogy in the form of a paragraph.
- Understand the terms “metaphor” and “simile” and be able to compose an example using information from central text.
- Become familiar with the basic parts and functions of the human brain.

Activity

1 Brain Twister Helmet

Using the images from your text on pages 28, 29, and 31, label your blank copy of the brain hat; afterwards, use the glossary on pages 76-79 to create working definitions for those labeled parts. A working definition includes your version (in your own words) of how that part of the brain functions, where it is located, and other important information. Working definitions are typically concise or shorter, more efficient ways of describing something.

Brain Hat Graphic Organizer



Activity

2 Understanding the Brain

While you are watching the Ted Ed video, complete the Listener's 3-2-1 in your academic notebook.

Listener's 3-2-1

Criteria	Your Response
3 List three parts of the brain, with functions	
2 Describe two conditions the brain can experience.	
1 Make one connection between this video and Phineas.	

Come up with another way to describe the brain in terms of function and structure. Get creative. Try to compose at least a five-sentence description. This type of description is referred to as an analogy — the comparing of two things for the purpose of further explanation.

Activity

3 Grow, Grow Neuron!

How would you describe the neuron firing to a peer who may not have had the benefit of the video you have just watched? Use a metaphor or simile to assist you in this task. To review, a metaphor compares two unlike items in definite terms, using “is” as the verb most times. A simile compares two items using “like” or “as” as the bridge between those two items. In the space below, compose a three-sentence description that includes either a simile or a metaphor.

Read pages 34-42 of *Phineas Gage*. Complete the graphic organizer below.

Select five significant details from your reading that you feel are important to your understanding of the events in this part of the chapter. For each detail, list the page number on which it appears.	Based on the details you selected, write a three-sentence summary of the central idea of this part of Chapter One.
1. 2. 3. 4. 5.	

Lesson 5
Taking Sides

In this lesson you will

- Develop an understanding of the terms “Whole Brainers” and “Localizers” based on your reading of the central text.
- Read pages 34-42 and complete a reading log based on these pages.
- View a Ted Ed video on the “distributed model” and the “localistic model” of brain functions and create a timeline using a graphic organizer in your academic notebooks.
- Write an argument paragraph in which you take a side as a “whole brainer” or a “localizer,” including at least three pieces of evidence to support your claim.
- Peer edit another student’s paragraph using a checklist.
- Revise your paragraph according to the peer revision checklist and your partner’s suggestions.
- Apply strategies for locating words in an informational text that are unfamiliar to you and determining the meaning of those words, using both context clues and dictionaries.
- Revisit the prompt for the presentation.

Activity

1 "Whole Brainers" vs. "Localizers"

Class definition of the term "Whole Brainer":

Class definition of the term "Localizer":

As you read the remaining pages of Chapter Two, "Following Phineas Gage," on the T-Chart in the academic notebook, record evidence for your side. Next, while the "Whole Brainers" talk, the "Localizers" should record their evidence on the T-chart and vice versa.

Whole Brainers	Localizers

Activity

2 A Timeline of Events

As you watch the video "The Great Brain Debate," pay close attention to the scientists and their theories/discoveries. Then, fill in the blanks in the timeline below. Doing so will give you a comprehensive view of how scientists moved from the whole brain theory vs. localizer debate to a better understanding of how the brain works. Some of the events have been completed for you.

Late 18th Century

Franz Joseph Gall
Establishes the study of phrenology.

1840s

Earnest Aubertin & Pierre Gratiolet
Propose conflicting ideas on how the brain works.

1861

Pierre Florens

1870s

Karl Wernicke

Fritsch and Hitzing

1909

Korbinian Brodmann
Builds a cortex map with 52 separate areas.

Karl Wernicke

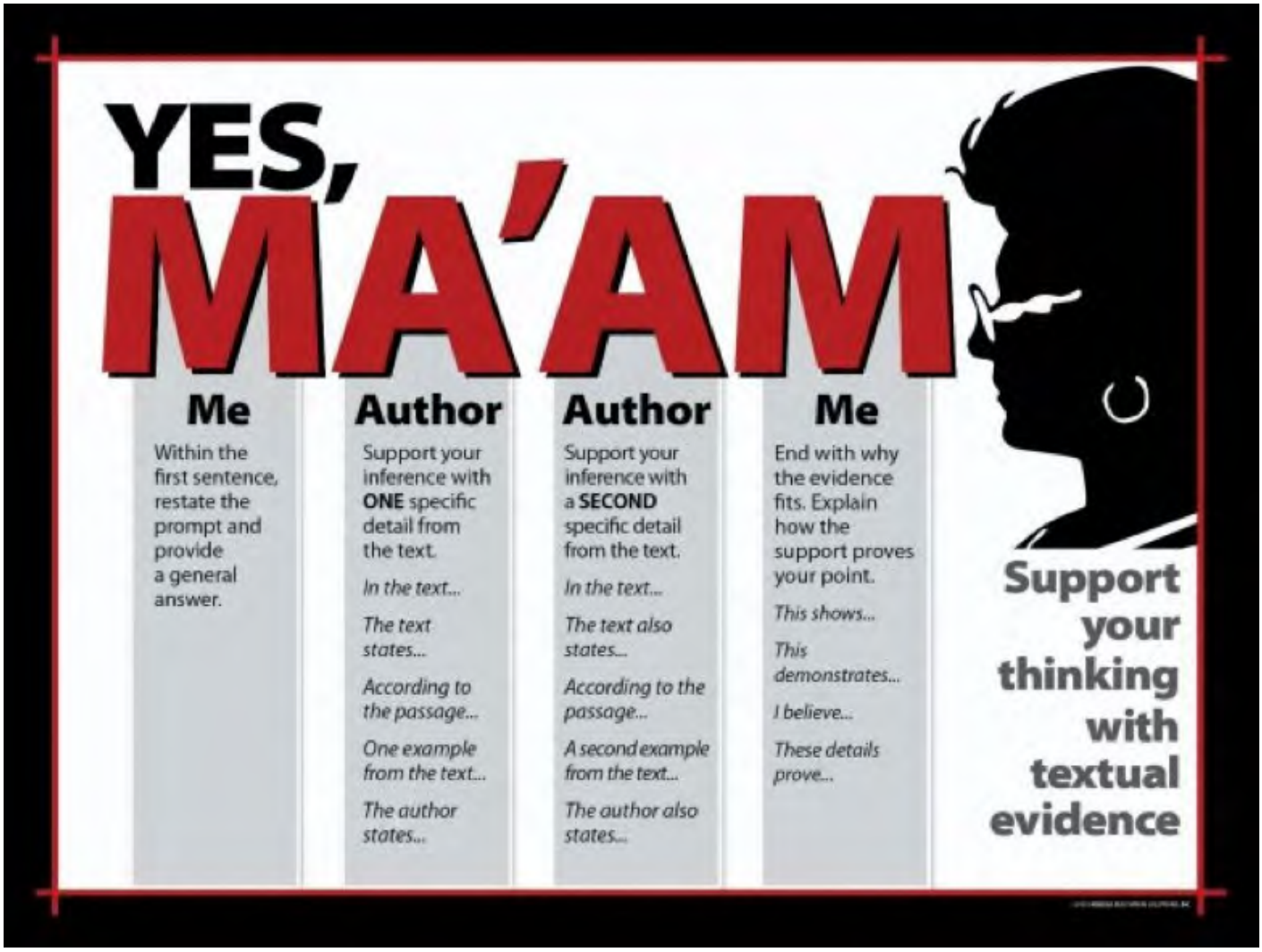
Today

Measure two types of connectivity: anatomical and functional.
Both Aubertin and Gratiolet's models are used to understand how cognition happens.

Activity

3 Make Your Case

Now that you have gathered evidence from the central text and watched a video on various theories about how the brain functions, write a short paragraph in which you take a side as either a whole brainer or a localizer. Use the evidence you have gathered to support your argument. Refer to the T-chart in Activity 1 and the timeline in Activity 2 as you gather support for your argument. Include at least two pieces of evidence to support your claim. Use the "Yes MAAM" guide below to create your paragraph.



Activity

4 Vocabulary

Choose ONE of the words from the list in the box below and ONE unfamiliar word from the chapter, "What We Thought About How We Thought." For each of your words, complete the chart below. Remember to use the context of the word (the sentence in which it is found) to help you understand the dictionary definition.

Choice words and the page numbers on which they can be found:

Ether p.24	Cadaver p.27	Vital p.37
Specimen p.24	Singular p.31	Intolerable p.38
Equanimity. p.26	Involuntarily p.37	Profane p.38

Word from the list (all):	Rate My Understanding (check one): ☐ Know It ☐ Sort of Know It ☐ Don't Know It at All
My Guess on Meaning:	
Dictionary Definition (include the part of speech):	
Context (the sentence in which the word appears and the page number):	
Does the dictionary definition fit the context of the word? If not, what definition does fit? What clues are in the sentence to help you understand the meaning of the word from context?	
Restate or explain the new word in your own words:	Create a representation of the word (a picture or symbolic representation):

Word from the list (all):	Rate My Understanding (check one): ☐ Know It ☐ Sort of Know It ☐ Don't Know It at All
My Guess on Meaning:	
Dictionary Definition (include the part of speech):	
Context (the sentence in which the word appears and the page number):	
Does the dictionary definition fit the context of the word? If not, what definition does fit? What clues are in the sentence to help you understand the meaning of the word from context?	
Restate or explain the new word in your own words:	Create a representation of the word (a picture or symbolic representation):

Activity

5 Revisiting the Prompt

How do conditions of the brain affect us emotionally, physically, and intellectually?

After reading *Phineas Gage: A Gruesome but True Story About Brain Science* and other informational texts on brain research, write an oral presentation in which you explain physical, emotional, or intellectual conditions of the brain and relate the information to how the brain works.

Complete the graphic organizer as you plan your presentation.

Possible topics for Presentation	**Information from texts that relates to each topic (cite the source and the page number, if given)**
Topic 1:	
Topic 2:	
Topic 3:	

Lesson 6
Putting the Pieces Together

In this lesson you will

- Read pages 43-53, ending with "…concerns than Phineas Gage" and complete the reading log in the academic notebook.
- Use the CRAAP method to determine a source's validity.
- Revisit parallelism and identify parallel structures in a portion of the central text.
- Sequence the events of Phineas' death using a graphic organizer.
- Write an obituary for Phineas Gage using significant details from his life.
- Share your obituaries in small groups, explaining your rationale for the details you selected or omitted.
- Peer edit a partner's obituary and revise your own obituary based on a peer review checklist.

Activity

1 Gathering Details

Read pages 43-53 of *Phineas Gage*, ending with "…concerns than Phineas Gage." Complete the graphic organizer below.

Select five significant details from your reading that you feel are important to your understanding of the events in this part of the chapter. For each detail, list the page number on which it appears.	Based on the details you selected, write a three-sentence summary of the central idea of this part of Chapter Three.

Activity

2 Evaluating Evidence

View the following primary source documents. These documents will give you some additional information about Barnum's museum. Pay close attention to information such as author, date, and audience. For each source, determine its usefulness if you, like Professor Malcolm, were attempting to determine if Phineas was an exhibit at the American Museum. Complete the **CRAAP** table for each source on page 62. You may not be able to answer all questions about each source, but if the information is provided, include it in your evaluation.

First source:

American Museum Illustrated Guide Book, 1850

Barnum advertised his American Museum as the home of "millions of curiosities," and visitors could purchase a guidebook such as this one to learn more about them. The Guidebooks included extensive descriptions (and in some cases small illustrations) of the various attractions and exhibits that filled the museum from floor to ceiling. The image below is one page from a Guidebook. The text is reprinted below. Citation: "The Lost Museum Archive." American Museum Illustrated Guide Book, 1850. American Social History Project/Center for Media and Learning, n.d. Web. 30 June 2015.

Text from the image on page 61:

Very different are the following illustrations of human life: they show us peace and purity, and the cultivation of domestic virtues. A lady is seen playing on the piano-forte one of the sweet airs Jenny Lind has made her own; an aged man, with his as aged partner, is reading the Scriptures; and children, who it is easy to perceive, have been reared to religion, temperance, and honor, are in their appropriate groups.

Figures of the well-known Siamese Twins, stand next to that of a Chinese Mandarin, clothed in the real costume of that dignitary. The appearance of this figure is very dignified, and we notice the "button" which signalizes the particular class to which the magistrate belongs, which contrasts strongly with the plain Quaker garb of the Giant and Giantess, Mr. Robert Hales and Miss Eliza Simpson, who were married on the stage of the Museum, Feb. 17, 1849.

The birth and trial of Christ, are the concluding group. They are necessarily very interesting to the visitor.

Having made acquaintance with these waxen representatives, of celebrated personages, we ascend by a handsome flight of broad stairs.

On ascending them, it is necessary to direct the visitor to a splendid oil painting of Jenny Lind, which is suspended from the wall on the landing. It is an excellent likeness, and is accompanied by a daguerreotype likeness of Mr. Barnum, another of him and the celebrated Tom Thumb, and the bill of programme of Professor Anderson's performances before Queen Victoria.

View of the Waxwork Room.

Very different are the following illustrations of human life: they show us peace and purity, and the cultivation of domestic virtues. A lady is seen playing on the piano-forte one of the sweet airs Jenny Lind has made her own; an aged man, with his as aged partner, is reading the Scriptures; and children, who it is easy to perceive, have been reared to religion, temperance and honor, are in their appropriate groups.

Siamese Twins.

Figures of the well known Siamese Twins, stand next to that of a Chinese Mandarin, clothed in the real costume of that dignitary. The appearance of this figure is very dignified, and we notice the "button" which signalizes the particular

Chinese Mandarin.

Giant and Giantess.

class to which the magistrate belongs, which contrasts strongly with the plain Quaker garb of the Giant and Giantess, Mr. Robert Hales and Miss Eliza Simpson, who were married on the stage of the Museum, Feb. 17, 1849.

The Birth and the Trial of Christ, are the concluding group. They are necessarily very interesting to the visitor.

Having made acquaintance with these waxen representatives, of celebrated personages, we ascend by a handsome flight of broad stairs.

Stairway to the Picture Gallery.

On ascending them, it is necessary to direct the visitor to a splendid oil painting of Jenny Lind, which is suspended from the wall on the landing. It is an excellent likeness, and is accompanied by a daguerreotype likeness of Mr. Barnum, another of him and the celebrated Tom Thumb, and the bill or programme of Professor Anderson's performances before Queen Victoria

Currency When was the information posted/ published? Has the information been revised/updated? Is the information current or out-of-date for your topic?	
Relevance Does the information relate to or answer your topic? Who is the intended audience? Would you be comfortable using this source for a more in-depth research task on this topic?	
Authority Who is the author/publisher? Are the author's/publisher's credentials given? What are those credentials? Is the author qualified to write about this topic? How? Is there contact information to reach the author/publisher for further questions?	
Accuracy Where does the information come from? Sources? Can you verify sources? Is the information supported by evidence? Does the language or tone seem biased and/or free from emotion?	
Purpose What purpose/reason does this information serve? Is the purpose clear? Is the information fact, opinion, or propaganda? Does the point of view appear objective and impartial? Are there political, cultural, religious or person biases?	

Second source:

Mr. Barnum on Museums, *The Nation*, August 10, 1865

When *The Nation* attacked the American Museum in an anonymously authored article on July 27, 1865, Barnum responded immediately, firing back this letter to the editors. He defended his need to make a profit from his museum which, unlike those in Britain, was not supported by government funds, and vigorously defended himself against charges of vulgarity in his Lecture Room dramas and attractions. Barnum concludes the letter by outlining his plans for his next museum, a defiant rejoinder to the editors of The Nation who had been happy to see it gone.

Citation: Barnum, P.T. "The Lost Museum Archive." Mr. Barnum on Museums. *The Nation*, August 10, 1865. American Social History Project/Center for Media and Learning, n.d. Web. 30 June 2015.

BRIDGEPORT, Conn., July 29, 1865
TO THE EDITOR OF THE NATION:

THE NATION is just the journal our "nation" needed, and it delights thousands besides my humble self. But the article on "Museums" in the last number exhibits a little of the slashing style of the London Saturday Review, or else I am blinded by my prejudices or interests.

I am not thin-skinned, and I know my Museum was not so refined or classic or scientifically arranged as the foreign governmental institutions, for mine had to support my family, while those require annually from the government thousands of pounds. "That class for which it [my Museum] would seem to have been originally intended" would not support a proper museum pecuniarily. More's the pity — but such is the stern fact. Hence, to make it self-supporting, I was obliged to popularize it, and while I still held on to the "million of curiosities," millions of people were only induced to see them because, at the same time, they could see whales, giants, dwarfs, Albinoes, dog shows, et cetera. But it is a great error to state that I ever permitted "vulgar sensation dramas." No vulgar word or gesture, and not a profane expression, was ever allowed on my stage! Even in Shakespeare's plays, I unflinchingly and invariably cut out vulgarity and profanity. It is equally incorrect that "respectable citizens did not take their wives daughters" "to see a play on that stage." Your writer doubtless supposed he was stating facts, but let him enquire, and he will find that nothing could be further from the truth. I am sensitive on these points, because I was always extremely squeamish in my determination to allow nothing objectionable on my stage.

I permitted no intoxicating liquors in the Museum. I would not even allow my visitors to "go out to drink" and return again without paying the second time, and this reconciled them to the "ice-water" which was always profuse and free on each floor of the Museum. I could not personally or by proxy examine into the character of every visitor, but I continually had half a score of detectives dressed in plain clothes, who incontinently turned into the street every person of either sex whose actions indicated loose habits. My interest even depended upon my keeping a good reputation for my Museum, and I did it to a greater degree than one out of ten could attain who had charge of a free museum, or even a free picture gallery. Now, I beg of you to submit the above to the writer of the article in question, and ask him, as an act of justice, to set me right before the public. Humbug with me has had its day, and although I always gave the money's worth of that which was not demoralizing, I often grieved that the taste of the million was not elevated. But now, having made my "million" nearly twice told, I really aspire to do a good and great thing, and I ask hereby the aid of you and your writer in accomplishing it.

I hope that the fire of the late Museum will have fumigated and burned out the humbug from the public mind to such a degree that it can discover that Barnum has got neither horns nor hoofs, and that he has as much love for refinement and the elevation of the race, especially in this country, as even your excellent writer, "or any other man." I merely hope that this writer will carefully and impartially ponder this hastily written letter, and manfully give me justice. If he will, at the same time, lend me a helping hand in the way of council, he will confer a great favor on myself, which I will endeavor to transfer for the benefit of my countrymen.

In great haste, truly yours,
P.T. Barnum.

Currency When was the information posted/ published? Has the information been revised/updated? Is the information current or out-of-date for your topic?	
Relevance Does the information relate to or answer your topic? Who is the intended audience? Would you be comfortable using this source for a more in-depth research task on this topic?	
Authority Who is the author/publisher? Are the author's/publisher's credentials given? What are those credentials? Is the author qualified to write about this topic? How? Is there contact information to reach the author/publisher for further questions?	
Accuracy Where does the information come from? Sources? Can you verify sources? Is the information supported by evidence? Does the language or tone seem biased and/or free from emotion?	
Purpose What purpose/reason does this information serve? Is the purpose clear? Is the information fact, opinion, or propaganda? Does the point of view appear objective and impartial? Are there political, cultural, religious or person biases?	

Activity

3 Reviewing Parallelism

Sentences with equal parts should read in a smooth and balanced way. These equal parts should be parallel. That is, they should be in the same form. Sentences containing parts that are not parallel are faulty.

Not parallel: Nick decided to go to soccer practice after school and that he would study later.

Parallel: Nick decided to go to soccer practice after school and to study later.

Parallel: Nick decided that he would go to soccer practice after school and that he would study later.

Not parallel: Marcia likes to read science fiction books and seeing horror movies.

Parallel: Marcia likes reading science fiction books and seeing horror movies.

Now look at pages 47-48, beginning with "Until Professor Macmillan…" and ending with "He knows his reins." Which sentences demonstrate parallel structure? Write them in the space provided below. For each sentence, explain why it demonstrates parallelism. Try to locate at least three examples.

Sentence that demonstrates parallel structure (write the entire sentence in the space below):

Why that sentence is parallel:

Sentence that demonstrates parallel structure (write the entire sentence in the space below):

Why that sentence is parallel:

Sentence that demonstrates parallel structure (write the entire sentence in the space below):

Why that sentence is parallel:

Activity

4 Sequencing Events

Reread pages 49-53, beginning with "In 1859…" and ending with "…his thirty-seventhbirthday." Sequence the major events that lead to Phineas' death. Be sure to write each event in your own words. Some of the events are listed for you.

Events Leading to Phineas' Death
Event 1
Event 2 Phineas recovers and begins doing odd jobs.
Event 3
Event 4
Event 5 Phineas' seizures become worse.
Event 6

Based on these events, what can you infer about Phineas' death?

Activity

5 Finishing Phineas' Story

An obituary is written about a deceased person. It typically describes accomplishments, important biographical details (such as date and place of birth and relatives), and other notable facts. Obituaries are important secondary sources that are frequently used for research. Consider them as a person's "final story."

Visit the following website to view obituaries. Read one or two obituaries and list types of information found in obituaries.

http://www.nytimes.com/pages/obituaries/index.html

Now write specific details from an obituary you read, and then classify them according to the type of information.

Details/Facts From The Obituary	Type Of Information (Dates, Accomplishments, Relatives, Notable Facts)

Now write an obituary for Phineas since one was never written. Be sure to include important details and accomplishments about his life. You will need to revisit earlier chapters of the book to find details for your obituary. Look for the following information:

- Name, age (preferably in the first graph)
- Occupation, achievements or reason for notoriety
- Time, place, and cause of death
- Birthdate, birthplace, current residence
- Survivors (only immediate family)
- Memberships in organizations, military service
- Funeral and burial arrangements, donations

Begin by prewriting and listing events, details, and accomplishments. Include the following information: name, age, occupation, achievements; time, place, and cause of death; birthdate, birthplace, current residence, and survivors.

Important Details/Facts from Phineas' Life:

Now write an obituary that follows the format we've examined in class.

Now that you have written your obituary, you will exchange papers with a partner and peer edit each other's work. Use the following checklist. Check yes or no for each criteria.

Paper's Author:

Peer Editor:

☐ **Yes** ☐ **No** The writer uses obituary style.

☐ **Yes** ☐ **No** The writer includes significant accomplishments, facts, and details.

☐ **Yes** ☐ **No** The writer uses accurate spelling, grammar, and punctuation, including parallel structure.

After you look at your peer editor's notes, revise your obituary as needed.

Lesson 7
Deepening Our Understanding

In this lesson you will

- Read the central text beginning with “Half the world away…” on page 53, through the end of the chapter on page 64, and complete the graphic organizer for those pages.
- Examine the life mask on page 4 and the skull on page 62, noting similarities and differences in the two images of Phineas’ head and drawing conclusions based on the differences and similarities in the two images.
- Answer the questions on page X of the academic notebook and discuss your responses with a shoulder partner and in a class discussion.
- Read and annotate an informational text and a literary text on the subject of autism and complete a Venn diagram based on those texts and the central text.
- Apply strategies for locating words in an informational text that are unfamiliar to you and determine the meaning of those words, using both context clues and dictionaries.

Activity

1 Graphic Organizer

Based on your reading of pages 53 beginning with “Half the world away…” through the end of Chapter Three, “Following Phineas Gage,” complete the graphic organizer.

Select five significant details from your reading that you feel are important to your understanding of the events in this part of the chapter. For each detail, list the page number on which it appears.	Based on the details you selected, write a three-sentence summary of the central idea of this part of Chapter Three.

Activity

2 Comparing Visual Texts

Compare and contrast the life mask on page 4 of *Phineas Gage* and the skull on page 62. In the space below, record similarities and differences in the two images of Phineas' head.

Similarities	Differences

Now that you have read about the accident, what conclusions can you make based on the differences and similarities in the two images?

Activity

3 "Whole-Brainers" and "Localizers"

Let's revisit "whole-brainers" and "localizers." Look at page 52 in your academic notebook to review the definition of the two terms as well as what each group believed.

Re-read central text pages 53 beginning with "Half the world away..." through page 56 ending with "…has lost track of Phineas. Then answer the questions below.

How did Broca and Wernecke change these theories?

How do their discoveries help you understand how the brain works?

How do their discoveries help you understand how Phineas' injury affected him?

Activity
4

Now you will read and annotate an excerpt from the website "Autism Speaks" and an excerpt from the novel *The Curious Incident of the Dog in the Night-time.* Then, you will relate what you learn from these sources to Phineas' injury and behavior. Use the annotation skills you have learned to help you understand the text. Pay special attention to behaviors that people with autism exhibit.

Social Symptoms

From the start, typically developing infants are social beings. Early in life, they gaze at people, turn toward voices, grasp a finger, and even smile. In contrast, most children with autism seem to have tremendous difficulty few months of life, many do not interact and they avoid eye contact. They seem indifferent to other people, and often seem to prefer being alone. They may resist attention or passively accept hugs and cuddling. Later, they seldom seek comfort or respond to parents' displays of anger or affection in a typical way. Research has suggested that although children with autism are attached to their parents, their expression of this attachment is often unusual and difficult to "read." To parents, it may seem as if their child is not attached at all. Parents who looked forward to the joys of cuddling, teaching, and playing with their child may feel crushed by this lack of the expected and typical attachment behavior. Children with autism also are slower in learning to interpret what others are thinking and feeling. Subtle social cues — whether a smile, a wink, or a grimace—may have little meaning. To a child who misses these cues, "Come here" always means the same thing, whether the speaker is smiling and extending her arms for a hug or frowning and planting her fists on her hips. Without the ability to interpret gestures and facial expressions, the social world may seem bewildering. To compound the problem, people with autism have difficulty seeing things from another person's perspective. Most 5-year-olds understand that other people have different information, feelings, and goals than they have. A person with autism may lack such understanding. This inability leaves them unable to predict or understand other people's actions.

Although not universal, it is common for people with autism also to have difficulty regulating their emotions. This can take the form of "immature" behavior such as crying in class or verbal outbursts that seem inappropriate to those around them. The individual with autism might also be disruptive and physically aggressive at times, making social relationships still more difficult. They have a tendency to "lose control," particularly when they're in a strange or overwhelming environment, or when angry and frustrated. They may at times break things, attack others, or hurt themselves. In their frustration, some bang their heads, pull their hair, or bite their arms.

Now read the excerpt from *The Curious Incident of the Dog in the Night-time*, a story about a teenager named Christopher John Francis Boone who has autism. In the story, he decides to investigate the mysterious death of a dog in his neighborhood.

Lastly, re-read pages 20 and 22 of *Phineas Gage*, beginning with "In the spring…" and ending with "twenty years."

Now you will join a group that will focus on one of the three texts. Complete the Venn diagram for your text. After all of the groups have finished listing behaviors in their part of the diagram, each group will report out.

Now that you have read the texts and completed most of the Venn diagram, finish the diagram by listing behaviors that you find mentioned in all three texts where the circles intersect.

Lastly, re-read pages 20 and 22 of *Phineas Gage* beginning with "In the spring…" and ending with "twenty years."

3. My name is Christopher John Francis Boone. I know all the countries of the world and their capital cities and every prime number up to 7,057.

Eight years ago, when I first met Siobhan, she showed me this picture

and I knew that it meant "sad," which is what I felt when I found the dead dog.

Then she showed me this picture

and I knew that it meant "happy," like when I'm reading about the Apollo space missions, or when I am still awake at 3 a.m. or 4 a.m. in the morning and I can walk up and down the street and pretend that I am the only person in the whole world.

Then she drew some other pictures

but I was unable to say what these meant.

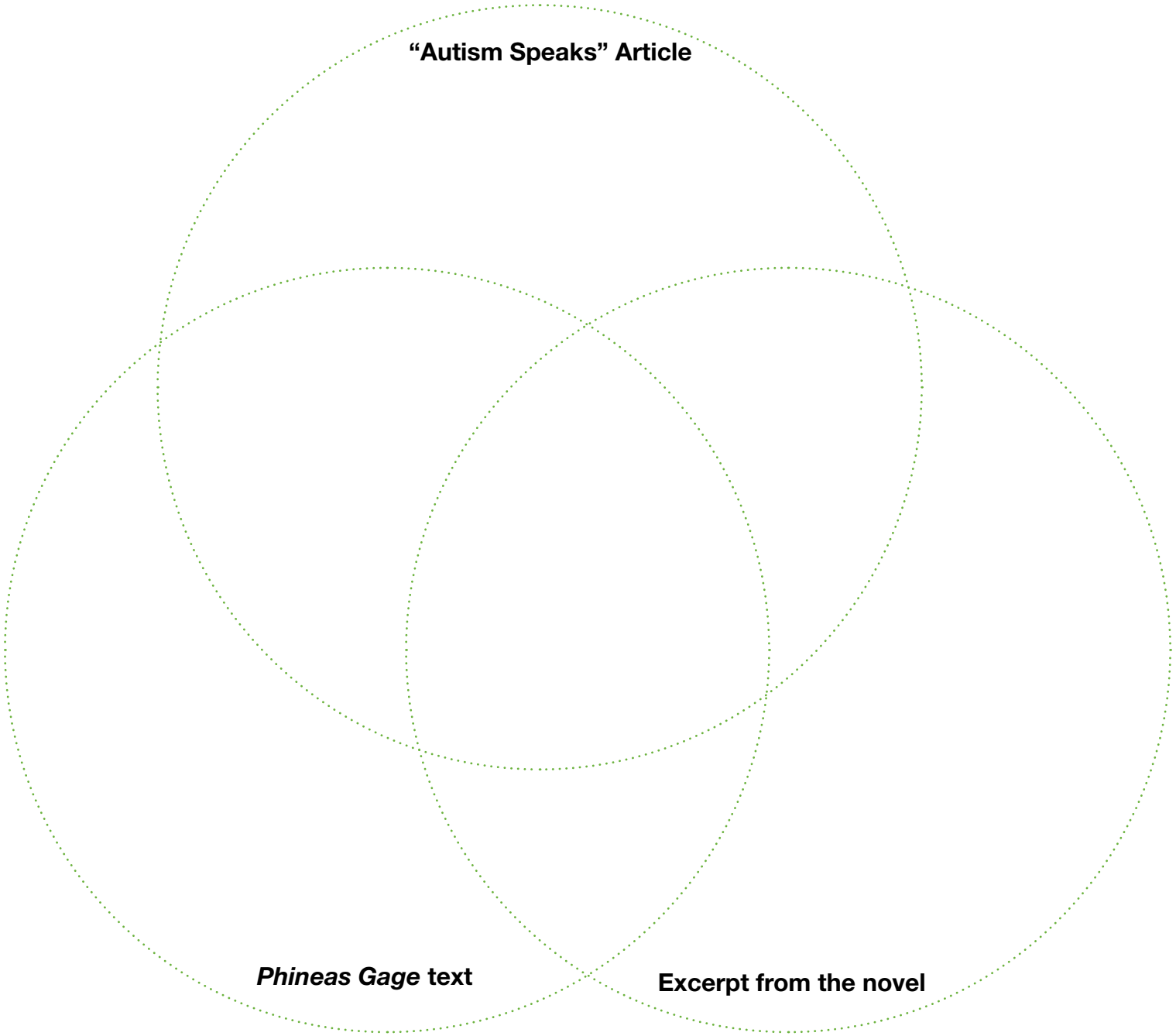
I got Siobhan to draw lots of these faces and then write down next to them exactly what they meant. I kept the piece of paper in my pocket and took it out when I didn't understand what someone was saying. But it was very difficult to decide which of the diagrams was most like the face they were making because people's faces move very quickly.

When I told Siobhan that I was doing this, she got out a pencil and another piece of paper and said it probably made people feel very

and then she laughed. So I tore the original piece of paper up and threw it away. And Siobhan apologized. And now if I don't know what someone is saying, I ask them what they mean or I walk away.

Now you will join a group that will focus on one of the three texts. Complete the Venn diagram for your text. After all of the groups have finished listing behaviors in their part of the diagram, each group will report out.

Now that you have read the texts and completed most of the Venn diagram, finish the diagram by listing behaviors that you find mentioned in all three texts where the circles intersect.



Activity

5 Vocabulary

Choose ONE of the words from the list in the box below and ONE unfamiliar word from "Following Phineas Gage." For each of your words, complete the chart below. Remember to use the context of the word (the sentence in which it is found) to help you understand the dictionary definition.

Choice words and the page numbers on which they can be found:

Gawked p.44
Perforated p.44
Skeptics p.45
Instinctive p.48
Invalid p.50
Lumbering p.52
Cordial p.56
Radically p.59
Impairment p.59
Shrewd p.59

Word from the list (all):	Rate My Understanding (check one): ☐ Know It ☐ Sort of Know It ☐ Don't Know It at All
My Guess on Meaning:	
Dictionary Definition (include the part of speech):	
Context (the sentence in which the word appears and the page number):	
Does the dictionary definition fit the context of the word? If not, what definition does fit? What clues are in the sentence to help you understand the meaning of the word from context?	
Restate or explain the new word in your own words:	Create a representation of the word (a picture or symbolic representation):

Word from the list (all):	Rate My Understanding (check one): ☐ Know It ☐ Sort of Know It ☐ Don't Know It at All
My Guess on Meaning:	
Dictionary Definition (include the part of speech):	
Context (the sentence in which the word appears and the page number):	
Does the dictionary definition fit the context of the word? If not, what definition does fit? What clues are in the sentence to help you understand the meaning of the word from context?	
Restate or explain the new word in your own words:	Create a representation of the word (a picture or symbolic representation):

Lesson 8
Further Research Into Phineas

In this lesson you will

- Read pages 65-75, “Putting Phineas Together Again,” in the central text and complete the graphic organizer for those pages.
- Complete a graphic organizer listing the steps of Dr. Anna Damasio’s recreation of Phineas’ brain injury.
- Read and annotate an interview with Dr. Antonio Damasio.
- Participate in a question and answer activity based on the interview with Dr. Damasio.
- Write a paragraph in which you agree, disagree, or qualify Fleischmann’s opinion on whether Phineas was lucky or unlucky.
- Peer edit and revise your paragraphs.
- Participate in small-group and whole-group discussions based on the stance you took in your paragraphs.
- Apply strategies for locating words in an informational text that are unfamiliar to you and determining the meaning of those words, using both context clues and dictionaries.

Activity

1 Graphic Organizer

Based on your reading of Chapter Four, "Putting Phineas Together Again," complete the graphic organizer.

Select five significant details from your reading that you feel are important to your understanding of the events in this part of the chapter. For each detail, list the page number on which it appears.	Based on the details you selected, write a three-sentence summary of the central idea of this part of Chapter Four.

Activity

2 Following a Recreation

Reread pages 67–70, beginning with "Studying the brain scans…" and ending with "…who had cortex tumor surgery." Now sequence the steps of Dr. Anna Damasio's recreation of Phineas' brain injury. Complete the graphic organizer below. The first and last steps are included for you.

Steps In The Process Dr. Damasio's Recreation
Step 1 Damasio asks Dr. Galaburda to x-ray, photograph, and remeasure Phineas' skull.
Step 2
Step 3
Step 4
Step 5
Step 6 The findings reveal that Phineas' injuries match brain scans of patients who had cortex tumor surgery.

Now that you have examined Dr. Damasio's work, how does it help you to better understand Phineas' injury?

Activity

3 Q & A with a Neuroscientist

Read the interview with Dr. Antonio Damasio, a professor of neuroscience at the University of Southern California. As you read, annotate the text using the skills you have used throughout this unit. Refer to the annotation chart in Lesson 1 on page 19 of your academic notebook.

For decades, biologists spurned emotion and feeling as uninteresting. But Antonio Damasio demonstrated that they were central to the life-regulating processes of almost all living creatures.

Damasio's essential insight is that feelings are "mental experiences of body states," which arise as the brain interprets emotions, themselves physical states arising from the body's responses to external stimuli. (The order of such events is: I am threatened, I experience fear, and I feel horror.) He has suggested that consciousness, whether the primitive "core consciousness" of animals or the "extended" self-conception of humans, requiring autobiographical memory, emerges from emotions and feelings.

His insight, dating back to the early 1990s, stemmed from the clinical study of brain lesions in patients unable to make good decisions because their emotions were impaired, but whose reason was otherwise unaffected — research made possible by the neuroanatomical studies of his wife and frequent coauthor, Hanna Damasio. Their work has always depended on advances in technology. More recently, tools such as functional neuroimaging, which measures the relationship between mental processes and activity in parts of the brain, have complemented the Damasios' use of neuroanatomy.

Damasio has written four artful books that explain his research to a broader audience and relate its discoveries to the abiding concerns of philosophy. He believes that neurobiological research has a distinctly philosophical purpose: "The scientist's voice need not be the mere record of life as it is," he wrote in a book on Descartes. "If only we want it, deeper knowledge of brain and mind will help achieve … happiness."

Antonio Damasio talked with Jason Pontin, the editor in chief of MIT Technology Review.

When you were a young scientist in the late 1970s, emotion was not thought a proper field of inquiry.

We were told very often, "Well, you're going to be lost, because there's absolutely nothing there of consequence." We were pitied for our poor choice.

How so?

William James had tackled emotion richly and intelligently. But his ideas [mainly that emotions are the brain's mapping of body states, ideas that Damasio revived and experimentally verified] had led to huge controversies in the beginning of the 20th century that ended nowhere. Somehow researchers had the sense that emotion would not, in the end, be sufficiently distinctive—because animals had emotions, too. But what animals don't have, researchers told themselves, is language like we do, nor reason or creativity—so let's study that, they thought. And in fact, it's true that most creatures on the face of the earth do have something that could be called emotion, and something that could be called feeling. But that doesn't mean we humans don't use emotions and feelings in particular ways.

Because we have a conscious sense of self?

Yes. What's distinctive about humans is that we make use of fundamental processes of life regulation that include things like emotion and feeling, but we connect them with intellectual processes in such a way that we create a whole new world around us.

What made you so interested in emotions as an area of study?

There was something that appealed to me because of my interest in literature and music. It was a way of combining what was important to me with what I thought was going to be important scientifically.

What have you learned?

There are certain action programs that are obviously permanently installed in our organs and in our brains so that we can survive, flourish, procreate, and, eventually, die. This is the world of life regulation — homeostasis — that I am so interested in, and it covers a wide range of body states. There is an action program of thirst that leads you to seek water when you are dehydrated, but also an action program of fear when you are threatened. Once the action program is deployed and the brain has the possibility of mapping what has happened in the body, then that leads to the emergence of the mental state. During the action program of fear, a collection of things happen in my body that change me and make me behave in a certain way whether I want to or not. As that is happening to me, I have a mental representation of that body state as much as I have a mental representation of what frightened me.

And out of that "mapping" of something happening within the body comes a feeling, which is different from an emotion?

Exactly. For me, it's very important to separate emotion from feeling. We must separate the component that comes out of actions from the component that comes out of our perspective on those actions, which is feeling. Curiously, it's also where the self emerges, and consciousness itself. Mind begins at the level of feeling. It's when you have a feeling (even if you're a very little creature) that you begin to have a mind and a self.

But that would imply that only creatures with a fully formed sense of their minds could have fully formed feelings —

No, no, no. I'm ready to give the very teeny brain of an insect — provided it has the possibility of representing its body states—the possibility of having feelings. In fact, I would be flabbergasted to discover that they don't have feelings. Of course, what flies don't have is all the intellect around those feelings that could make use of them: to found a religious order, or develop an art form, or write a poem. They can't do that; but we can. In us, having feelings somehow allows us also to have creations that are responses to those feelings.

Do other animals have a kind of responsiveness to their feelings?

I'm not sure that I even understand your question.

Are dogs aware that they feel?

Of course. Of course dogs feel.

No, not "Do dogs feel?" I mean: is my dog Ferdinando conscious of feeling? Does he have "feelings about his feelings?

[Thinks.] I don't know. I would have my doubts.

But humans are certainly conscious of being responsive.

Yes. We're aware of our feelings and are conscious of the pleasantness or unpleasantness associated with them. Look, what are the really powerful feelings that you deal with every day? Desires, appetites, hunger, thirst, pain — those are the basic things.

How much of the structure of civilization is devoted to controlling those basic things? Spinoza says that politics seeks to regulate such instincts for the common good.

We wouldn't have music, art, religion, science, technology, economics, politics, justice, or moral philosophy without the impelling force of feelings.

Do people emote in predictable ways regardless of their culture? For instance, does everyone hear the Western minor mode in music as sad?

We now know enough to say yes to that question.

At the Brain and Creativity Institute [which Damasio directs], we have been doing cross-cultural studies of emotion. At first we thought we would find very different patterns, especially with social emotions. In fact, we don't. Whether you are studying Chinese, Americans, or Iranians, you get very similar responses. There are lots of subtleties and lots of ways in which certain stimuli elicit different patterns of emotional response with different intensities, but the presence of sadness or joy is there with a uniformity that is strongly and beautifully human.

Could our emotions be augmented with implants or some other brain-interfacing technology?

Inasmuch as we can understand the neural processes behind any of these complex functions, once we do, the possibility of intervening is always there. Of course, we interface with brain function all the time: with diet, with alcohol, and with medications. So it's not that surgical interventions will be any great novelty. What will be novel is to make those interventions cleanly so that they are targeted. No, the more serious issue is the moral situations that might arise.

Why?

Because it really depends on what the intervention is aimed at achieving.

Suppose the intervention is aimed at resuscitating your lost ability to move a limb, or to see or hear. Do I have any moral problem? Of course not. But what if it interferes with states of the brain that are influential in how you make your decisions? Then you are entering a realm that should be reserved for the person alone.

What has been the most useful technology for understanding the biological basis of consciousness?

Imaging technologies have made a powerful contribution. At the same time, I'm painfully aware that they are limited in what they give us.

If you could wish into existence a better technology for observing the brain, what would it be?

I would not want to go to only one level, because I don't think the really interesting things occur at just one level. What we need are new techniques to understand the interrelation of levels. There are people who have spent a good part of their lives studying systems, which is the case with my wife and most of the people in our lab. We have done our work on neuroanatomy, and gone into cells only occasionally. But now we are actually studying the state of the functions of axons [nerve fibers in the brain], and we desperately need ways in which we can scale up from what we've found to higher and higher levels.

What would that technology look like?

I don't know. It needs to be invented.

Now that you have read the text, pretend you also are going to conduct an interview with Dr. Damasio. Create three questions based on your reading. Question topics might include points for clarification, future research, and relation to *Phineas Gage*. Questions should be open, rather than closed. An open question leads to a detailed response rather than a brief or "yes" or "no" answer. These questions often begin with the words "how" or "why."

Three questions for Dr. Damasio:

1.

2.

3.

Responses to my partner's questions:

Question 1:

Question 2:

Question 3:

Activity

4 A Matter of Luck

At the beginning of the book, Fleischmann asks the question "Was Phineas lucky or unlucky?" At the end of the book, he shares his own opinion. Reread his answer to this question on page 75. Now write a paragraph in which you agree, disagree, or qualify (agree in part) with Fleischmann's answer. Use evidence from the text and any supplemental texts that you have read. Use Yes MAAM (located on page 54 of the academic notebook) to help you construct your paragraph.

Peer editing checklist – check yes or no for each of the following criteria.

Paper's Author:

Peer Editor:

- ☐ **Yes** ☐ **No** The second sentence supports the writer's inference with one specific detail from the text.
- ☐ **Yes** ☐ **No** The third sentence supports the writer's inference with a second specific detail from the text.
- ☐ **Yes** ☐ **No** The last sentence explains how the support proves the writer's point.
- ☐ **Yes** ☐ **No** The writer uses parallel structure and complete sentences.

Based on the peer review above, revise your paragraph as needed.

Activity

5 Agree to Disagree

Based on the paragraph above, you will participate in a discussion in which you will argue your position to two groups of students: one that has the same point of view and one that has the opposite point of view. To prepare for your discussion, complete the questions below.

My stance:

Support for my stance:

Activity

6 Vocabulary

Choose ONE of the words from the list in the box below and ONE unfamiliar word from "Following Phineas Gage." For each of your words, complete the chart below. Remember to use the context of the word (the sentence in which it is found) to help you understand the dictionary definition.

Choice words and the page numbers on which they can be found:

Interact p.65
Renowned p.66
Afflicted p.66
Empathy p.66
Conductivity . . .p.67
Tranquil p.67
Retroactively . . .p 67
Generic p.68
Hypothetical . . . p.69
Riveting p.69
Oriented p.7

Word from the list (all):	Rate My Understanding (check one): ☐ Know It ☐ Sort of Know It ☐ Don't Know It at All
My Guess on Meaning:	
Dictionary Definition (include the part of speech):	
Context (the sentence in which the word appears and the page number):	
Does the dictionary definition fit the context of the word? If not, what definition does fit? What clues are in the sentence to help you understand the meaning of the word from context?	
Restate or explain the new word in your own words:	Create a representation of the word (a picture or symbolic representation):

Word from the list (all):	Rate My Understanding (check one): ☐ Know It ☐ Sort of Know It ☐ Don't Know It at All
My Guess on Meaning:	
Dictionary Definition (include the part of speech):	
Context (the sentence in which the word appears and the page number):	
Does the dictionary definition fit the context of the word? If not, what definition does fit? What clues are in the sentence to help you understand the meaning of the word from context?	
Restate or explain the new word in your own words:	Create a representation of the word (a picture or symbolic representation):

Lesson 9
Preparing for the Presentation

In this lesson you will

- Understand the criteria of your summative assessment – a presentation on conditions that affect the brain.
- Actively listen to media using Listener's 3-2-1 strategy.
- Understand ethos, pathos, and logos and the application of persuasion to your presentation.
- Perform research for your presentation using the CRAAP method to find reliable sources.
- Conduct pre-writing and planning of your presentation.
- Use research and prewriting to create a presentation.

Activity

1 Knowing Your Audience

Brain Conditions Presentation

Guiding Task: You are responsible for researching, creating, and giving a presentation that explains physical, emotional, or intellectual conditions of the brain and that should enable your audience to learn how these conditions affect us. Your driving question is "How do conditions of the brain affect us emotionally, physically, and intellectually?"

Use the chart below to ensure that your presentation meets the criteria in the left column.

Criteria	Pre-Planning/Checklist
1. Approved topic	
2. Valid research consisting of three sources	
3. Appropriate presentation method (Power point, Prezi, etc.)	
4. Attractive and consistent formating	
5. Information that addresses the specific	

When considering audience, you need to understand pathos, ethos, and logos. After all, you are persuading your audience to take their brain health seriously with easy activities/exercises.

After watching the Ted Ed video regarding these topics, fill out the Listener's 3-2-1.

Listener's 3-2-1

Criteria	Your Response
3 Provide working definitions for the three means of persuasion.	
2 List and explain two means of persuasion that will be easy to achieve in your presentation.	
1 Explain and create a plan for what you think will be the most difficult means of persuasion to achieve in your presentation.	

Activity 2

Creating a Presentation

The first step in answering your driving question is to do research about conditions that affect the brain. Don't forget that you need to cite three sources for your station. Before you do a blind Internet search, determine if your source is reliable and valid. The CRAAP test will allow you to evaluate those sites.

Your first charge is to determine a presentation topic; fill out this portion on your plan¬ner. Fill out a CRAAP test for each source.

CRAAP CRITERIA Currency, Relevance, Authority, Accuracy, Purpose	SOURCE: Notes from this article per CRAAP section	SOURCE: Notes from this article per CRAAP section
C • When was the information posted/published? • Has the information been revised/updated? • For your topic? • Is the information current or out-of-date?		
R • Does the information relate to or answer your topic? Who is the intended audience? • Would you be comfortable using this source for a more in-depth research task on this topic?		
A • Who is the author/publisher? • Are the author's/publisher's credentials given? What are those credentials? • Is the author qualified to write about this topic? How? • Is there contact information to reach the author/publisher for further questions?		

A • Does the information relate to or answer your topic? Who is the intended audience? • Would you be comfortable using this source for a more in-depth research task on this topic?		
P • Who is the author/publisher? • Are the author's/publisher's credentials given? What are those credentials? • Is the author qualified to write about this topic? How? • Is there contact information to reach the author/publisher for further questions?		

Now that you have finished researching and planning, it's time to create the presentation. Use the template below to blend your research and ideas into a cohesive presentation.

Presentation Planner

COMPONENT	INFORMATION (information from sources; planning information)	APPLICATION TO PRESENTATION (how you will convey this information)
Specific Presentation Topic • Specifically, what condition(s) will you be addressing? • What part(s) of the brain does the condition(s) affect? • What problem(s) does this condition create?		
Recommended Solution • How can the condition be avoided or fixed?		
Audience • Who is your audience? • How will your presentation appeal to them? (Consider ethos, pathos, and logos.)		
Presentation Format • What method will you use to give your presentation? • What will you need to create your presentation (software, Smart board, poster board, etc.)?		

Presentation Planner

Criteria	Your Presentation
Introduction/Background • Driving question • Background about the brain/ part of brain	
Condition/Solution • Describe the condition(s) • Describe how individuals are affected • Propose solution	
Works Cited • Lists sources used in the presentation • Follows MLA format	

Lesson 10
Completing the Presentation

In this lesson you will

- Learn how to edit and revise for clarity in your presentation.
- Complete the presentation process by presenting to your audience.

Activity 1

Editing and Revising Drafts

Presentation

Now that you have taken your presentation through the editing and revision stations, let's perform a quick peer reaction to your presentation. In your groups, hand your presentation to the person to your left. Complete the Peer Reaction Listener's 3-2-1. As you review your partner's presentation, use the scoring rubric found on page 17 of your Academic Notebook to guide your responses below.

Peer Reaction Listener's 3-2-1

Criteria	Your Response
3 Locate three areas in the presentation that need editing/ revising. Leave a small note for each, explaining why.	
2 Celebrate two areas on the presentation where the writer excelled. Explain how.	
1 "Steal" one idea or strategy this writer used that you will try to use in your presentation.	

Activity

2 Completing the Process

Consider the marks and notes you made during your station rotation editing and revision activity and the Peer Reaction Listener's 3-2-1 when finalizing your presentation. When you finish with your final draft, notify your teacher so that you can schedule a conference. After the conferences are complete, you will share your presentation with your audience.