



**Literacy Design  
Collaborative**

# The Nervous System

★ TASK

by Ashley J. Allen and Cory Duty

This module is a study of the nervous system with a focus on integration and coordination. Students will draw on content studied during the unit and their readings of primary and secondary sources about the nervous system to write an informational essay. The focal point of this module is astrocytes and how they affect memory and learning.

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GRADES

**11 - 12**

DISCIPLINE

 **Science**

COURSE

 **Biology II  
(Honors/Dual  
Enrollment)**

PACING

 **N/A**

# Section 1: What Task?

## Teaching Task

### Task Template 12 - Informational or Explanatory

What effect do astrocytes have on memory and learning? After reading journal and textbook articles on astrocytes, write an essay in which you define astrocytes and explain how astrocytes affect learning and memory. Support your discussion with evidence from the text(s).

## Standards

### ***Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects***

#### CCR.R.1

Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.

#### CCR.R.2

Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

#### CCR.R.4

Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.

#### CCR.R.6

Assess how point of view or purpose shapes the content and style of a text.

#### CCR.R.10

Read and comprehend complex literary and informational texts independently and proficiently.

#### CCR.W.2

Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.

#### CCR.W.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

#### CCR.W.5

Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

#### CCR.W.9

Draw evidence from literary or informational texts to support analysis, reflection, and research.

## CCR.W.10

Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.

### ***Louisiana Content Standards for Science***

## LS-H-G5

Researching technology used in prevention, diagnosis, and treatment of diseases/disorders.

## LS-H-F1

Identifying the structure and functions of organ systems;

## LS-H-F3

Recognizing that behavior is the response of an organism to internal changes and/or external stimuli;

## LS-H-E3

Differentiating among levels of biological organization;

### ***Texts***

#### **Hole's Essentials of Human Anatomy and Physiology**

Shier, David, Butler, Jackie, and Lewis, Ricki. Hole's Essentials of Human Anatomy and Physiology (Tenth Edition). Boston: McGraw-Hill Higher Education. Chapter 9, pages 212-252.

#### **Astrocytes Affect Brain's Information Signaling, Research Finds**

#### **Glial Cells Add Memory Information**

#### **'Calm' Astrocytes Shield Brain After Stroke**

## Student Work Rubric - Informational or Explanatory Task - Grades 9-12

	Emerging	Approaches Expectations	Meets Expectations	Advanced
	1	2	3	4
<b>Controlling Idea</b>	Presents a general or unclear controlling idea.	Presents a <b>clear</b> controlling idea <b>that addresses the prompt</b> , with an <b>uneven focus</b> .	Presents <b>and maintains a clear, specific</b> controlling idea that addresses <b>all aspects</b> of the prompt and <b>takes into account the complexity of the topic</b> .	Presents and maintains a <b>precise, substantive</b> controlling idea that addresses all aspects of the prompt, <b>takes into account the complexity of the topic</b> and, where appropriate, <b>acknowledges gaps in evidence or information</b> .
<b>Selection &amp; Citation of Evidence</b>	Includes minimal details from sources. Sources are used without citation.	Includes <b>details, examples, and/or quotations</b> from sources that are <b>relevant to the controlling idea</b> . <b>Inconsistently</b> cites sources.	Includes details, examples, and/or quotations from sources that <b>support the controlling and supporting ideas</b> . <b>Consistently</b> cites sources <b>with minor formatting errors</b> .	Includes <b>well-chosen</b> details, examples, and/or quotations from sources that <b>fully support</b> the controlling and supporting ideas. <b>Consistently</b> cites sources <b>using appropriate format</b> .
<b>Development / Explanation of Sources</b>	Explanation of ideas and source material is irrelevant, incomplete, or inaccurate.	Explains ideas and source material <b>to support the controlling idea</b> , with <b>some incomplete reasoning or explanations</b> .	<b>Accurately</b> explains ideas and source material and <b>how they support</b> the controlling idea.	<b>Thoroughly</b> and accurately explains ideas and source material <b>to support and develop</b> the controlling idea.
<b>Organization</b>	Lacks an evident structure. Makes unclear connections among ideas, concepts, and information.	<b>Groups ideas and uses transitions</b> to develop the controlling idea, with <b>some lapses in coherence or organization</b> .	<b>Groups and sequences</b> ideas to <b>develop a cohesive explanation</b> . Uses transitions to <b>clarify the relationships among complex ideas, concepts, and information</b> .	Groups and sequences ideas <b>in a logical progression in which ideas build to create a unified whole</b> . Uses <b>varied</b> transitions to clarify the <b>precise</b> relationships among complex ideas, concepts, and information.
<b>Conventions</b>	Major errors in standard English conventions interfere with the clarity of the writing. Language or tone is inappropriate.	Errors in standard English conventions <b>sometimes interfere</b> with the clarity of the writing. Uses language and tone that are <b>sometimes inappropriate</b> for the audience and purpose.	<b>Consistently applies</b> standard English conventions; <b>minor errors</b> , while noticeable, <b>do not interfere</b> with the clarity of the writing. Uses language and tone <b>appropriate to the audience and purpose</b> .	Consistently applies standard English conventions, <b>with few errors</b> . Demonstrates <b>varied syntax and precise word choice</b> . <b>Consistently</b> uses language and tone appropriate to the audience and purpose.
<b>Content Understanding (Generic)</b>	Attempts to include disciplinary content in explanation or argument but understanding of content is weak; content is irrelevant, inappropriate, or inaccurate.	Briefly notes disciplinary content relevant to the prompt; shows basic or uneven understanding of content; minor errors in explanation.	Accurately presents disciplinary content relevant to the prompt with sufficient explanations that demonstrate understanding.	Integrates relevant and accurate disciplinary content with thorough explanations that demonstrate in-depth understanding.

### ***Background for Students***

This module will require you to apply information learned in the Nervous System unit to determine the effects of astrocytes on memory and learning. You should draw on what you have learned and apply the reading, research, and writing skills you have learned throughout this semester. Also, include relate A Learning Experience results to memory and learning.

### ***Extension***

Not provided

## *Section 2: What Skills?*

### ***Preparing for the Task***

**BRIDGING CONVERSATION > TASK ENGAGEMENT:** Ability to connect the task and new content to existing knowledge, skills, experiences, interests, and concerns.

**TASK AND RUBRIC ANALYSIS > TASK ANALYSIS:** Ability to understand and explain the task's prompt and rubric.

### ***Reading Process***

**PRE-READING > TEXT SELECTION:** Ability to identify appropriate texts.

**ACTIVE READING > ESSENTIAL VOCABULARY:** Ability to identify and master terms essential to understanding a text.

**ACTIVE READING > NOTE-TAKING:** Ability to select important facts and passages for use in one's own writing.

**POST-READING > ENHANCING COMPREHENSION:** Ability to identify the central point and main supporting elements of a text.

**POST-READING > ACADEMIC INTEGRITY:** Ability to use and credit sources appropriately.

### ***Transition to Writing***

**BRIDGING CONVERSATION > IDENTIFYING SIGNIFICANT ELEMENTS:** Ability to begin linking reading results to writing task.

### ***Writing Process***

**PLANNING > PLANNING THE WRITING:** Ability to develop a line of thought and text structure appropriate to an informational/explanatory task.

**DEVELOPMENT > INTRODUCTORY PARAGRAPH:** Ability to establish a controlling idea and consolidate information relevant to task.



**DEVELOPMENT > BODY PARAGRAPHS:** Ability to construct an initial draft with an emerging line of thought and structure.

**REVISION, EDITING, AND COMPLETION > REVISION:** Ability to refine text, including line of thought, language usage, and tone as appropriate to audience and purpose.

**REVISION, EDITING, AND COMPLETION > EDITING:** Ability to proofread and format a piece to make it more effective.

**REVISION, EDITING, AND COMPLETION > FINAL DRAFT:** Ability to submit final piece that meets expectations.

## Section 3: What Instruction?

PACING	SKILL AND DEFINITION	PRODUCT AND PROMPT	SCORING GUIDE	INSTRUCTIONAL STRATEGIES
<b>Preparing for the Task</b>				
10 mins	<b>BRIDGING CONVERSATION &gt; TASK ENGAGEMENT:</b> Ability to connect the task and new content to existing knowledge, skills, experiences, interests, and concerns.	<b>QUICK LIST</b> Brainstorm different types of cells by creating an A-Z quick list of cells. Construct a paragraph detailing why cells are important in the body systems.	<ul style="list-style-type: none"> <li>Completed A-Z list</li> <li>Paragraph is thorough</li> </ul>	<ul style="list-style-type: none"> <li>Facilitate sharing of A-Z quick list</li> <li>Facilitate paragraph sharing</li> <li>Link cells to the different systems of the body</li> <li>Provide readings to establish timeline</li> </ul>
Standards:  <b>RST.11-12.4</b> : Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11—12 texts and topics.				
Additional Attachments:   <b>A-Z Quick List</b>				
10 mins	<b>BRIDGING CONVERSATION &gt; TASK ENGAGEMENT:</b> Ability to connect the task and new content to existing knowledge, skills, experiences, interests, and concerns.	<b>NERVOUS EXPERIENCE LAB</b> Complete <b>A Nervous Experience Lab</b> .	<ul style="list-style-type: none"> <li>Lab participation</li> <li>Completed lab sheet with data</li> <li>Refer to lab results in essay relating to astrocytes and memory and learning effects</li> </ul>	<ul style="list-style-type: none"> <li>Provide materials for lab (paper clips, rulers, lab sheet)</li> <li>Facilitate lab results sharing</li> </ul>
Standards:  <b>RST.11-12.3</b> : Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text.				
Additional Attachments:   <b>A Nervous Experience Lab</b>				
15 mins	<b>TASK AND RUBRIC ANALYSIS &gt; TASK ANALYSIS:</b> Ability to understand and explain the task's prompt and rubric.	<b>BULLETS</b> In your own words, what are the important features of a good response to this prompt?	<ul style="list-style-type: none"> <li>Responses reflect astrocytes and their effects on memory and learning.</li> <li>Responses are thorough.</li> </ul>	<ul style="list-style-type: none"> <li>Share examples of type of text students will produce (either from past students or from professional writers).</li> <li>Identify or invite students to identify key features of examples.</li> <li>Pair students to share and improve their individual bullets.</li> <li>Create a classroom list: Choose one student to share a few ideas on the board, and ask others to add to it.</li> </ul>

Standards:

**RST.11-12.2** : Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

### Reading Process

20 mins

**PRE-READING > TEXT SELECTION**: Ability to identify appropriate texts.

#### NOTES

For each text, list the needed bibliographic information. Add bullets on why you think the work is credible and/or worthy of study.

- Identifies author, title, publisher, date, and any other needed information (for example, the volume for a periodical or the editor for an anthology).
- Includes reasonable evidence that work is credible and/or worthy of study.

- Provide citation guide and discuss why each element of citation is needed.
- Ask students to brainstorm what makes an author credible and/or worthy of study.
- Provide access to research sources for students to assess the texts.
- **Note:** for an “after researching” task, add teaching and time for students to select the texts they will use.

Standards:

**RST.11-12.7** : Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

**RST.11-12.2** : Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

15 mins

**ACTIVE READING > ESSENTIAL VOCABULARY**: Ability to identify and master terms essential to understanding a text.

#### VOCABULARY SELF AWARENESS CHECKLIST

Compile list of vocabulary and give an example and your definition of each term.

- Lists appropriate terms and phrases.
- Provides accurate definitions.

- After scoring, ask some students to share definitions of terms that others overlooked or misunderstood.
- After scoring, be willing to provide direct instruction or guide a close reading if needed to work through a key phrase most students missed.

Standards:

**RST.11-12.4** : Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11—12 texts and topics.

**RST.11-12.5** : Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

**RST.11-12.1** : Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

Additional Attachments:

 **Vocabulary Self-Awareness Checklist**

20 mins

**ACTIVE READING > NOTE-TAKING**: Ability to select important facts and passages for use in one's own writing.


#### NOTES

From each text, make a list of the elements that look most important for answering the prompt. Do

- Identifies relevant elements.
- Includes information to

- Teach a sample format for note taking.
- Check that early student work is in the assigned format (or in another format that gathers the needed information effectively).



		what you need to do to avoid plagiarism.	support accurate citation (for example, page numbers for a long text, clear indication when quoting directly).	
	<p>Standards:</p> <p><b>RST.11-12.1</b> : Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.</p>			
15 mins	<p><b>ACTIVE READING &gt; NOTE-TAKING:</b> Ability to select important facts and passages for use in one's own writing.</p>	<p><b>ANATOMY OF THE BRAIN</b></p> <p>Label the parts of the brain on anatomy sheet and color each area.</p>	<ul style="list-style-type: none"> <li>Label parts of the brain</li> <li>Color worksheet</li> </ul>	<ul style="list-style-type: none"> <li>Provide Anatomy of the Brain worksheet</li> <li>Provide coloring pencils</li> </ul>
	<p>Standards:</p> <p><b>RST.11-12.5</b> : Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.</p> <p><b>RST.11-12.2</b> : Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.</p> <p>Additional Attachments:</p> <p> <b>Anatomy of the Brain Worksheet</b></p>			
20 mins	<p><b>POST-READING &gt; ENHANCING COMPREHENSION:</b> Ability to identify the central point and main supporting elements of a text.</p>	<p><b>SHORT REFLECTIVE ENTRY FOR EACH TEXT</b></p> <p>What is the author trying to accomplish? Which parts of the text show you that?</p>	<ul style="list-style-type: none"> <li>Answers questions with credible response.</li> </ul>	<ul style="list-style-type: none"> <li>Invite students to brainstorm ways to figure out any author's intent.</li> <li>Invite students to share and discuss their answers for each text.</li> <li>After the discussion, allow them to add to their entries.</li> </ul>
	<p>Standards:</p> <p><b>RST.11-12.2</b> : Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.</p> <p><b>RST.11-12.1</b> : Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.</p>			
15 mins	<p><b>POST-READING &gt; ACADEMIC INTEGRITY:</b> Ability to use and credit sources appropriately.</p>	<p><b>DEFINITION AND STRATEGIES</b></p> <p>Define "plagiarism" and list ways to avoid it.</p>	<ul style="list-style-type: none"> <li>Provides accurate definition.</li> <li>Lists several appropriate strategies.</li> </ul>	<ul style="list-style-type: none"> <li>Discuss respect for others' work to assemble evidence and create texts.</li> <li>Discuss academic penalties for stealing others thoughts and words.</li> </ul>
	<p>Standards:</p> <p><b>RST.11-12.4</b> : Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 11—12 texts and topics.</p>			

**RST.11-12.5** : Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

**RST.11-12.1** : Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

## Transition to Writing

15 mins

**BRIDGING CONVERSATION > IDENTIFYING SIGNIFICANT ELEMENTS**: Ability to begin linking reading results to writing task.

**BULLETS**  
In a quick write, note what you know now that you have read about astrocytes.

- Responses reflect accurate definitions of astrocytes and their effects on memory and learning.

- Socratic seminar discussion-based strategy.
- Small group discussion using questions.
- Relate Nervous Experience lab results to astrocytes and their effect on memory and learning.

Standards:

**WHST.11-12.1.C** : Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

**WHST.11-12.1** : Write arguments focused on discipline-specific content.

20 mins

**BRIDGING CONVERSATION > IDENTIFYING SIGNIFICANT ELEMENTS**: Ability to begin linking reading results to writing task.

**BUILD A NEURON**  
Construct a neuron with pipe cleaner and modeling clay. Label the structures of the neuron to understand astrocyte composition.

Model has correctly labeled parts

- Provide modeling clay and pipe cleaner

Standards:

**WHST.11-12.1.B** : Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.

## Writing Process

10 mins

**PLANNING > PLANNING THE WRITING**: Ability to develop a line of thought and text structure appropriate to an informational/explanatory task.

**BUBBLE MAP**  
Create a bubble map with a minimum of five effects of astrocytes on memory and learning

- Creates a bubble map.
- Supports controlling idea.
- Uses evidence from texts read earlier.

- Provide a bubble map.
- Invite students to generate questions in pairs about how the format works, and then take and answer questions.


Standards:

**WHST.11-12.2.A** : Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.

**WHST.11-12.1.C** : Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.

Additional Attachments:

 **Bubble Map**

30 mins	<p><b>PLANNING &gt; PLANNING THE WRITING:</b> Ability to develop a line of thought and text structure appropriate to an informational/explanatory task.</p>	<p><b>TPEQEA</b> Complete TPEQEA strategy to write clear, concise paragraphs that include one topic sentence, one point sentence, three sentences with examples, three sentences with quotes, five sentences with elaboration, and five sentences with analysis</p>	<ul style="list-style-type: none"> <li>Completed TPEQEA relevant to topic and explanation</li> </ul>	<p>Provide TPEQEA writing format rubric sheet</p>
	<p>Standards:</p> <p><b>WHST.11-12.4</b> : Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p><b>WHST.11-12.2.E</b> : Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).</p> <p><b>WHST.11-12.2.D</b> : Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.</p> <p><b>WHST.11-12.2.C</b> : Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.</p> <p><b>WHST.11-12.2.B</b> : Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.</p> <p><b>WHST.11-12.2.A</b> : Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p><b>WHST.11-12.1.E</b> : Provide a concluding statement or section that follows from or supports the argument presented.</p> <p><b>WHST.11-12.1.C</b> : Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</p> <p><b>WHST.11-12.1.B</b> : Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.</p> <p><b>WHST.11-12.1</b> : Write arguments focused on discipline-specific content.</p> <p><b>WHST.11-12.1.A</b> : Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.</p> <p>Additional Attachments:</p> <p> <b>TPEQEA</b></p>			
15 mins	<p><b>DEVELOPMENT &gt; INTRODUCTORY PARAGRAPH:</b> Ability to establish a controlling idea and consolidate information relevant to task.</p>	<p><b>OPENING PARAGRAPH</b> Write an opening paragraph that includes a controlling idea and sequences the key points you plan to make in your composition.</p>	<ul style="list-style-type: none"> <li>Writes a concise summary statement or draft opening.</li> <li>Provides direct answer to main prompt requirements.</li> <li>Establishes a controlling idea.</li> <li>Identifies key points that support</li> </ul>	<ul style="list-style-type: none"> <li>Offer several examples of opening paragraphs.</li> <li>Ask class to discuss what makes them strong or weak.</li> </ul>

			development of the controlling idea.	
	<p>Standards:</p> <p><b>WHST.11-12.2.A</b> : Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p><b>WHST.11-12.1.C</b> : Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</p> <p><b>RST.11-12.9</b> : Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.</p>			
50 mins	<p><b>DEVELOPMENT &gt; BODY PARAGRAPHS:</b> Ability to construct an initial draft with an emerging line of thought and structure.</p>	<p><b>INITIAL DRAFT</b> Write an initial draft complete with opening, development, and closing; insert and cite textual evidence.</p>	<ul style="list-style-type: none"> <li>Provides complete draft with all parts.</li> <li>Supports the opening in the later sections with evidence and citations.</li> </ul>	<ul style="list-style-type: none"> <li>Encourage students to re-read prompt partway through writing, to check that they are on track.</li> </ul>
	<p>Standards:</p> <p><b>WHST.11-12.10</b> : Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.</p> <p><b>WHST.11-12.4</b> : Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p><b>WHST.11-12.2.E</b> : Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).</p> <p><b>WHST.11-12.2.D</b> : Use precise language, domain-specific vocabulary and techniques such as metaphor, simile, and analogy to manage the complexity of the topic; convey a knowledgeable stance in a style that responds to the discipline and context as well as to the expertise of likely readers.</p> <p><b>WHST.11-12.2.B</b> : Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.</p> <p><b>WHST.11-12.2.C</b> : Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.</p> <p><b>WHST.11-12.2.A</b> : Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p><b>WHST.11-12.2</b> : Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.</p> <p><b>WHST.11-12.1.E</b> : Provide a concluding statement or section that follows from or supports the argument presented.</p> <p><b>WHST.11-12.1.C</b> : Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</p> <p><b>WHST.11-12.1.B</b> : Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.</p> <p><b>WHST.11-12.1.A</b> : Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.</p> <p><b>WHST.11-12.1</b> : Write arguments focused on discipline-specific content.</p>			
1 hr	<p><b>REVISION, EDITING, AND COMPLETION &gt; REVISION:</b> Ability to</p>	<p><b>MULTIPLE DRAFTS</b> Refine composition's analysis, logic, and</p>	<ul style="list-style-type: none"> <li>Provides complete draft with all parts.</li> </ul>	<ul style="list-style-type: none"> <li>Model useful feedback that balances support for strengths and clarity about weaknesses.</li> <li>Assign students to provide each other with</li> </ul>

## The Nervous System

	refine text, including line of thought, language usage, and tone as appropriate to audience and purpose.	organization of ideas/points. Use textual evidence carefully, with accurate citations. Decide what to include and what not to include.	<ul style="list-style-type: none"> <li>Supports the opening in the later sections with evidence and citations.</li> <li>Improves earlier edition.</li> </ul>	feedback on those issues.
	<p>Standards:</p> <p><b>WHST.11-12.9</b> : Draw evidence from informational texts to support analysis, reflection, and research.</p> <p><b>WHST.11-12.6</b> : Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.</p> <p><b>WHST.11-12.5</b> : Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</p> <p><b>WHST.11-12.4</b> : Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p><b>WHST.11-12.2.E</b> : Provide a concluding statement or section that follows from and supports the information or explanation provided (e.g., articulating implications or the significance of the topic).</p> <p><b>WHST.11-12.2.A</b> : Introduce a topic and organize complex ideas, concepts, and information so that each new element builds on that which precedes it to create a unified whole; include formatting (e.g., headings), graphics (e.g., figures, tables), and multimedia when useful to aiding comprehension.</p> <p><b>WHST.11-12.2.B</b> : Develop the topic thoroughly by selecting the most significant and relevant facts, extended definitions, concrete details, quotations, or other information and examples appropriate to the audience's knowledge of the topic.</p> <p><b>WHST.11-12.2.C</b> : Use varied transitions and sentence structures to link the major sections of the text, create cohesion, and clarify the relationships among complex ideas and concepts.</p> <p><b>WHST.11-12.1.A</b> : Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.</p> <p><b>WHST.11-12.1</b> : Write arguments focused on discipline-specific content.</p> <p><b>RST.11-12.7</b> : Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.</p>			
50 mins	<p><b>REVISION, EDITING, AND COMPLETION &gt; EDITING</b>: Ability to proofread and format a piece to make it more effective.</p>	<p><b>CORRECT DRAFT</b></p> <p>Revise draft to have sound spelling, capitalization, punctuation, and grammar. Adjust formatting as needed to provide clear, appealing text.</p>	<ul style="list-style-type: none"> <li>Provides draft free from distracting surface errors.</li> <li>Uses format that supports purpose.</li> </ul>	<ul style="list-style-type: none"> <li>Briefly review selected skills that many students need to improve.</li> <li>Teach a short list of proofreading marks.</li> <li>Assign students to proofread each other's texts a second time.</li> </ul>
	<p>Standards:</p> <p><b>WHST.11-12.6</b> : Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.</p> <p><b>WHST.11-12.5</b> : Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</p>			
20 mins	<p><b>REVISION, EDITING, AND COMPLETION &gt; FINAL DRAFT</b>: Ability to submit final piece that meets expectations.</p>	<p><b>FINAL PIECE</b></p> <p>Turn in your complete set of drafts, plus the final version of your piece.</p>	<ul style="list-style-type: none"> <li>Fits the "Meets Expectations" category in the rubric for the teaching task.</li> </ul>	None
	Standards:			










**WHST.11-12.10** : Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

**WHST.11-12.6** : Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.



**WHST.11-12.5** : Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

## ***Instructional Resources***

### ***Student Handout***

-  **A Nervous Experience Lab**
-  **Bubble Map**
-  **Anatomy of the Brain Worksheet**
-  **GISTing Worksheet**
-  **TPEQEA**
-  **Split Page Notes**
-  **Peer Review**
-  **Quicklist**
-  **Vocabulary Self Awareness**

### ***Teacher Resource***

-  **Mini-lesson on essential aspects of body paragraphs**
-  **Mini-lesson on concluding paragraphs**

## *Section 4: What Results?*

### ***Student Work Samples***

#### ***Advanced***

 **Nervous System**

 **Nervous System**

#### ***Meets Expectations***

 **Nervous System**

 **Nervous System**

### ***Teacher Reflection***

This Nervous System module was created to get Biology II juniors and seniors to read and write about science content. The focus was astrocytes and their affects on memory and learning. As we study the human body, we find that nerve cell health is related to genetics and overall health of the person. I was very pleased with the progress my students made on this module.

## ***All Attachments***

🔗 Astrocytes Affect Brain's Information Signaling, Research Finds :

<https://s ldc.org/u/6w8lg96ktm30fpgkjkfkrs6ca>

🔗 Glial Cells Add Memory Information : <https://s ldc.org/u/zmhjd4ryh0ako6w3rqttmegq>

🔗 'Calm' Astrocytes Shield Brain After Stroke : <https://s ldc.org/u/4516ht2t9nxxiop9t7kv04be8>

📄 Nervous System : <https://s ldc.org/u/46gy677is3jietn3b2jlb20k0>

📄 Nervous System : <https://s ldc.org/u/3233k6t445qqt9ofewd3la8ar>

📄 Nervous System : <https://s ldc.org/u/1zswug8mr4flflkf6ljjhsrd1>

📄 Nervous System : <https://s ldc.org/u/cjhtsp5oa370cv66wk5mhqehv>

📄 A Nervous Experience Lab : <https://s ldc.org/u/grh4ej5ppluu9urj5bb5xqp4>

📄 Bubble Map : <https://s ldc.org/u/93sctgnw4combum6acgc6orv2>

📄 Anatomy of the Brain Worksheet : <https://s ldc.org/u/9uus4uc86oe0v9r9sc4kfxs53>

📄 GISTing Worksheet : <https://s ldc.org/u/dbon0vhk7adzmunpb7khk4rtp>

📄 TPEQEA : <https://s ldc.org/u/7yf714tk84nudhiuo8wcr1pxh>

📄 Split Page Notes : <https://s ldc.org/u/daqqwkwxsfc8c41uz2vpjmwsxc>

📄 Peer Review : <https://s ldc.org/u/3lrzvzd3ubkx4or8ovn43ydhd>

🔗 Mini-lesson on essential aspects of body paragraphs :

<https://s ldc.org/u/4k4hcjo3y7fuoskya31def8de>

🔗 Mini-lesson on concluding paragraphs : <https://s ldc.org/u/24q3oa27lhyo0aikitwxt6ut7>

📄 Quicklist : <https://s ldc.org/u/9633kw9d0mglj7pff3yg0p5xw>

📄 Vocabulary Self Awareness : <https://s ldc.org/u/c78t3fmqmd7a8n08jnfuubuw6>