

Overview

Overview | Eureka! Answering questions through scientific inquiry



## *Eureka! Answering questions through scientific inquiry*

by *Eric C. Sandberg*

*This module is planned for the first two months of Science instruction and is intended to help students understand how scientists answer questions through inquiry; students will explore nonfiction texts that provide both modern and historic examples.*

*This module specifically focuses on the following Common Core State Standard: CCSS.ELA-Literacy.RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.*

*This module also focuses on the following Pennsylvania State Science Eligible Content Standards:*

*S5.A.1.1.1: Explain how certain questions can be answered through scientific inquiry and/or technological design (e.g., investigate to find out if all clay or foil boats designs react the same when filled with paperclips).*

*S5.A.1.1.2: Explain how observations and/or experimental results are used to support inferences and claims about an investigation or relationship (e.g., make a claim based on information on a graph).*

*S5.A.1.1.3: Describe how explanations, predictions, and models are developed using evidence.*

*The module is intentionally designed to complement an inquiry Science unit known as Variables (FOSS, Delta Education). FOSS Variables is a hands-on inquiry module in which students explore variables, measurement, designing controlled experiments, and fair tests. During the module, students will "toggle" between engaging in Science investigations, in which they practice the Science and Engineering practices detailed in the Next Generation Science Standards (NGSS), and close active reading of informational texts that further explain and extend the Science content.*

*This module also integrates the protocols of Learning Targets (Moss and Brookhart, 2012) into each minitask. For each mini-task, a Learning Target and Performance of Understanding are detailed as part of the instructional strategies and mirror the mini-task prompt and product, respectively. Also, a success criteria is delineated as part of the scoring guide.*

**Grades:** 5

**Discipline:** Science

**Teaching Task:** Elementary Task 7 (Informational or Explanatory and Explain)

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## Section 1: What Task?

### TEACHING TASK

#### *Elementary Task 7 – [3 Levels]*

#### *Informational & Explain*

**L1:** . After reading informational texts and engaging in Scientific investigations , write an article for display at our school science fair in which you explain how scientists answer questions using inquiry . Give at least four examples from the texts to support your discussion.

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### STUDENT BACKGROUND

In this module, you will learn how scientists in ancient and modern times have answered questions. You will engage in a variety of science investigations to learn how scientists conduct experiments through inquiry and then extend that understanding by closely reading informational text and taking careful notes. You will deepen your understanding about this topic and demonstrate your learning by writing and presenting an article at our science fair.

### EXTENSION

As an extension, students may further investigate a well known scientist. Students can write a short monologue describing the discoveries, accomplishments, and obstacles the scientist overcame in making his/her discovery. Students may share the monologue as a performance for their peers.

## Rubric

Scoring Elements	Not Yet		Approaches Expectations		Meets Expectations		Advanced
	1	1.5	2	2.5	3	3.5	4
<b>Focus</b>	Attempts to address prompt, but is off-task.		Addresses prompt, but focus is uneven.		Addresses prompt with an adequately detailed response; stays on task		Addresses key aspects of prompt in a detailed response; stays on task.
<b>Controlling Idea</b>	Lacks a clear controlling idea to inform or explain .		Establishes a controlling idea to inform or explain, though may lack clarity or credibility.		Establishes a credible controlling idea to inform or explain.		Establishes and maintains a substantive and credible controlling idea to inform or explain.
<b>Reading/Research</b>	Attempts to include reading materials using examples, quotes, or other references.		Presents some information from reading materials but may lack accuracy or relevance.		Accurately presents information from reading materials relevant to the purpose of the prompt to develop argument or claim.		Accurately and effectively presents important information from reading materials to inform or explain.
<b>Development</b>	Attempts to inform or explain but lacks details.		Informs or explains by presenting some details.		Informs or explains using appropriate details.		Informs or explains by providing detailed and relevant information.
<b>Organization</b>	Lacks an opening, development, and/or closure.		Demonstrates an attempt to organize information within a structure to inform or explain.		Organizational structure adequately supports presentation of information.		Organizational structure enhances presentation of information.
<b>Conventions</b>	Lacks cohesion and control of grammar, usage, and mechanics appropriate to grade level.		Demonstrates an uneven command of standard English conventions appropriate to grade level.		Demonstrates a command of standard English conventions, with few errors as appropriate to grade level.		Maintains a well-developed command of standard English conventions, with few errors. Response includes language and tone appropriate to the audience, purpose, and specific requirements of the prompt.
<b>Content Understanding</b>	Content is irrelevant, inappropriate, or inaccurate.		Shows uneven understanding of disciplinary content.		Presents generally accurate disciplinary content.		Presents accurate and relevant disciplinary content to enhance understanding of topic.

## STANDARDS

### *Common Core Anchor Standards — Reading*

**R.CCR.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.

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**R.CCR.2:** Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.

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**R.CCR.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.

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**R.CCR.6:** Assess how point of view or purpose shapes the content and style of a text.

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**R.CCR.10:** Read and comprehend complex literary and informational texts independently and proficiently.

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### *Common Core Anchor Standards — Writing*

**W.CCR.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.

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**W.CCR.4:** Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

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**W.CCR.5:** Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.

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**W.CCR.9:** Draw evidence from literary or informational texts to support analysis, reflection, and research.

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**W.CCR.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.

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### *Common Core Anchor Standards — Language*

**L.CCR.1:** Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

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**L.CCR.2:** Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

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**L.CCR.3:** Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.

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**L.CCR.4:** Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.

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### *Custom Standards*

**PENNSYLVANIA SCIENCE ELIGIBLE CONTENT S5.A.1.1.1:** Explain how certain questions can be answered through scientific inquiry and/or technological design (e.g., investigate to find out if all clay or foil boats designs react the same when filled with paperclips).

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**PENNSYLVANIA SCIENCE ELIGIBLE CONTENT S5.A.1.1.2:** Explain how observations and/or experimental results are used to support inferences and claims about an investigation or relationship (e.g., make a claim based on information on a graph).

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**PENNSYLVANIA SCIENCE ELIGIBLE CONTENT S5.A.1.1.3:** Describe how explanations, predictions, and models are developed using evidence.

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## Section 2: What Skills?

### Selected Skills

#### *Preparing for the Task*

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

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**TASK ANALYSIS:** Ability to understand and explain the task's prompt and rubric (SL5.1).

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#### *Reading Process*

**READYING FOR READING:** Ability to ready for reading by preparing a note-taking format.

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**ENGAGING IN SCIENTIFIC INVESTIGATIONS:** Ability to complete scientific investigations using appropriate Science and Engineering Practices (Next Generation Science Standards: Appendix F)  
1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence 8. Obtaining, evaluating, and communicating information

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**CLOSE ACTIVE READING, ESSENTIAL VOCABULARY AND NOTE TAKING :** Ability to: • read purposefully; accurately quote textual evidence to support explanation of what the text says explicitly as well as inferences drawn from the text (RI5.1); • determine the meaning of grade 5 general and domain-specific words and phrases (RI5.4); • determine two or more main ideas of a text and explain how they are supported by key details through paraphrasing (RI5.2, W5.8); • provide a text based summary (RI5.2); • provide a list of sources (W5.8).

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**ORGANIZING NOTES :** Ability to explain a topic, integrate evidence from different sources/formats, summarize/paraphrase and prioritize relevant content (RI5.1, RI5.2, W5.8).

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#### *Transition to Writing*

**BRIDGING CONVERSATION TO WRITING :** Ability to: • use notes to engage in a range of collaborative conversations to: interpret information, present findings, sequence ideas logically using appropriate facts and relevant, descriptive details to support main ideas; use appropriate eye contact, speak clearly at an understandable pace (SL5.1, SL5.4); • summarize knowledge and ideas presented in multiple media formats (RI5.7, SL5.2).

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**READYING AS A WRITER:** Ability to explain the mode and text structure, the rubric, and link discussions to the writing task (SL5.1).

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## *Writing Process*

**PLANNING:** Ability to develop a line of thought and text structure in which ideas are grouped logically and appropriate to task, audience and purpose and relevant to completing informational/explanatory writing (W5.4).

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**ESTABLISHING FOCUS:** Ability to write a thesis statement (W5.2).

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**DEVELOPMENT 1:** Ability to: • write an initial draft of an opening paragraph that introduces the topic and provides a focus (W5.2); • link ideas within and across categories of information using words, phrases, and clauses (W5.2); • use precise language and domain-specific vocabulary (W5.2).

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**DEVELOPMENT 2:** Ability to: • construct an initial draft of the body paragraphs which develops the topic with relevant facts, definitions, concrete details, quotations and examples from print and digital sources (W5.2, W5.8); • link ideas within and across categories of information using words, phrases, and clauses (W5.2); • use precise language and domain-specific vocabulary (W5.2).

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**DEVELOPMENT 3:** Ability to: • link ideas within and across categories of information using words, phrases, and clauses (W5.2); • use precise language and domain-specific vocabulary (W5.2); • construct an initial draft of a concluding statement or section related to the information presented (W5.2).

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**REVISION 1:** Ability to develop a clear and coherent line of thought which responds to the prompt and maintains focus on developing all aspects of the task steadily throughout the piece (W5.4).

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**REVISION 2:** Ability to use words, sentence patterns and knowledge of language (verb tense) to refine and strengthen the development of informational/explanatory writing (W5.2, W5.4, W5.5, W5.10, L5.1).

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**EDITING:** Ability to demonstrate command of conventions of standard English grammar and usage; capitalization, punctuation and spelling when writing and speaking (L5.1, L5.2).

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**COMPLETION:** Ability to submit final piece that meets expectations.

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## Section 3: What Instruction?

### MiniTasks

#### *Preparing for the Task*

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

#### **LIST**

In a quick write, write your first reaction to the task prompt. Add some notes of things you know about this issue.

#### **Scoring Guide (Work Meets Expectations If):**

Success Criteria:

Responds completely to the prompt.

#### **Instructional Strategies:**

Learning Target: Today we are learning about our LDC task.

- Link this task to earlier class content.
- Students respond to prompt in quick write.
- Discuss student responses, chart, and work towards consensus.
- Clarify timetable and support plans for the task.

Performance of Understanding: Quick Write

**TASK ANALYSIS:** Ability to understand and explain the task's prompt and rubric (SL5.1).

#### **LIST**

In your own words, what are the important features of a good response to this prompt?

#### **Scoring Guide (Work Meets Expectations If):**

Success Criteria:

- Identifies key features
- Collaborate effectively during "Pass the Pen."

#### **Instructional Strategies:**

Learning Target: Today we are learning to analyze a task and its requirements.

- Share examples of type of text students will produce (either from past students or from professional writers).
- Identify or invite students to identify key features of examples.
- Pair students to share and improve their individual bullets.
- Create a classroom list using "Pass the Pen": Choose one student to share an idea on

the board, others add to it without speaking, repeat until class reaches consensus.

Performance of Understanding: Class list

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## *Reading Process*

**READYING FOR READING:** Ability to ready for reading by preparing a note-taking format.

### **NOTES**

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Note-taking Format

Create or review a note taking template.

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### **Scoring Guide (Work Meets Expectations If):**

Success Criteria:

Creates a note taking template to include notes from Scientific Investigations (observations and reflections) and Close Active Reading (essential vocabulary, reference source, relevant/important information and main ideas).

Writes in readable prose.

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### **Instructional Strategies:**

Learning Target: Today we are learning about the purpose of a note taking format.

Content:

- Teach the 'whats', 'hows' and 'whys' of the note taking template
- Model the creation of a format that includes sections for Scientific Investigations (observations and reflections) and Close Active Reading (essential vocabulary, reference source, relevant/important information and main ideas). A sample format is provided in the Appendix as a resource.
- Following independent work, provide time for pairs to provide feedback.

Performance of Understanding: Create your own notetaking template with a framework that accounts for each required element.

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**ENGAGING IN SCIENTIFIC INVESTIGATIONS:** Ability to complete scientific investigations using appropriate Science and Engineering Practices (Next Generation Science Standards: Appendix F)

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

### **NOTES**

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Use a note-taking format to ask questions; develop models; plan and carry out investigations; analyze and interpret data; use computational thinking; construct explanations; engage in arguments; and obtain, evaluate, and communicate information.

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**Scoring Guide (Work Meets Expectations If):**

Success Criteria: You engage in each scientific investigation using appropriate science practices and each Science Conversation as an active, positive learner.

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**Instructional Strategies:**

Learning Target: We will be learning how scientists conduct and complete scientific investigations.

In this module, learning will toggle from day to day between the mini-task of Engaging in Scientific Investigations and mini-task of Close Active Reading, Essential Vocabulary, and Note Taking. Please note that these two mini-tasks are each given 8-10 days for pacing, for a total of 16-20 days, but this pacing may vary based on the needs of your students. Students will complete the Science Investigations as found in the FOSS: Variables module, then toggle to Close Active Reading of the texts found in the mini-task below.

FOSS: Variables Investigations

Investigation 1: Swingers

Investigation 2: Lifeboats

Investigation 3: Plane Sense

Investigation 4: Flippers

During each investigation, students will record their notes following the notetaking format created in the mini-task above or the sample notebook format (found in resources).

At the completion of each hands-on investigation, students will take part in ongoing Science Conversations with a focus on reflecting on Science and Engineering practices and Science content.

Performance of Understanding: Student Science Notebook – student reflection on day’s Science investigation using sample notebook format (found in the resources).

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**CLOSE ACTIVE READING, ESSENTIAL VOCABULARY AND NOTE TAKING** : Ability to: • read purposefully; accurately quote textual evidence to support explanation of what the text says explicitly as well as inferences drawn from the text (RI.5.1); • determine the meaning of grade 5 general and domain-specific words and phrases (RI.5.4); • determine two or more main ideas of a text and explain how they are supported by key details through paraphrasing (RI.5.2, W.5.8); • provide a text based summary (RI.5.2); • provide a list of sources (W.5.8).

**NOTES**

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Use a note-taking format to record information (facts, data, quotes) relevant to the task; list (bullet) important/relevant facts, data, information and/or quotes; cite reference source and page number of quotes. As you record, use the CPR protocol to identify information from the text that Confirms your thinking in your Science Investigation notes (C), causes you to

ask probing questions (P), or causes you to reflect on your learning (R).

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### **Scoring Guide (Work Meets Expectations If):**

Success Criteria:

- Identifies and records information relevant to the task.
  - Uses a protocol for listing (e.g. bullets) facts, data, information and/or quotes.
  - Cites reference source and page number of quotes.
  - Writes in readable prose.
  - Makes appropriate connections, recorded in Science notebook using the prescribed protocol, between reflections gathered during Science investigations, Science Conversations, and Close Active Reading.
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### **Instructional Strategies:**

Learning Target: Today we are learning to take effective, complete notes.

Content: review section on note taking template.

- Teach skills and academic behaviors necessary for effective reading of nonfiction.
- Model and guide the application of note taking skills
- Develop through class discussion a list of common annotation strategies for use in identifying text evidence
- Discuss the term “relevant” and what it means to determine important/relevant quotes and information related to completing the task.
- Model rules and guidelines for using quotations, citing reference source and page number. Provide opportunities for guided and independent practice.
- Model strategies for understanding words in context and through word analysis, including the terms “denotation” (basic meaning; literal meaning) and “connotation” (implied additional meaning).

Text Sequence for whole group

(Please note some of the texts below exceed the upper limit of the CCSS Lexile band for grade 4-5, 740L-1010L. Offer support and use a method that best supports your students: Read aloud, choral read, small group, or partner read where necessary).

FOSS Science Stories: Variables

Investigation 1: Swingers

- What Scientists Do (Lexile 560L)
- Swinging through History (Lexile 900L)

Investigation 2: Lifeboats

- Sink or Swim? (Lexile 950L)
- Science in the Bathtub (Lexile 600L)

Investigation 3: Plane Sense

- Airplane Basics (Lexile 800L)
- Experimental Designs (Lexile 930L)
- Great Names in Aviation History (Lexile 1040L)
- Build Your Own Paper Airplane (Lexile 1030L)

Investigation 4: Flippers

- Flingers (Lexile 1110L)

- Prove It! (Lexile 880L)

The following student choice texts will be made available to students based upon interest and reading level.

- Scientists Solve Mystery Of Disappearing Salt Marshes

<http://www.npr.org/2012/10/18/163132026/scientists-solve-mystery-of-disappearing-salt-marshes>  
(Lexile 810L)

- Scientists Seek to Solve Oystercatcher Mystery – and You Can Watch Online

<http://web.ncsu.edu/abstract/science/wms-simons-oystercatcher/> (Lexile 1330L)

- Dean Kamen: Portable Medical Technology and Human Transportation Technology

<http://web.mit.edu/invent/iow/kamen.html> (Lexile 1290L)

Performance of Understanding: Student Science Notebook – student reflection on day’s reading using sample notebook format (found in the resources). Students will follow the CPR protocol, labeling their notes from Close Active Reading in a contrasting color with a "C" (Confirms your thinking in your Science Investigation notes, a "P" (causes you to ask probing questions), or "R" (causes you to reflect on your learning).

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**ORGANIZING NOTES :** Ability to explain a topic, integrate evidence from different sources/formats, summarize/paraphrase and prioritize relevant content (RI5.1, RI5.2, W5.8).

## NOTES

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Use a strategy to organize your notes as main ideas and supporting details.

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### Scoring Guide (Work Meets Expectations If):

Success Criteria:

Information is organized in a way that is relevant to the task.

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### Instructional Strategies:

Learning Target: Today we are learning to organize our notes from our Scientific Investigations and Close Active Reading into main ideas and details.

Content

- Model and think aloud how to read through notes and sort into main idea clusters, taking into account notes from both Scientific Investigations and Close Active Reading and CPR protocol labels.

- Model and think aloud how to organize notes as supporting details.

Performance of Understanding: Exit Slip – student reflection on day’s learning and student work sample (notes organized as main ideas and details).

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## *Transition to Writing*

**BRIDGING CONVERSATION TO WRITING :** Ability to: • use notes to engage in a range of

collaborative conversations to: interpret information, present findings, sequence ideas logically using appropriate facts and relevant, descriptive details to support main ideas; use appropriate eye contact, speak clearly at an understandable pace (SL5.1, SL5.4); • summarize knowledge and ideas presented in multiple media formats (RI5.7, SL5.2).

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### SHORT CONSTRUCTED RESPONSE

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#### Class Discussion

Participate in a discussion-based activity to review the articles read and address the topic of how scientists use inquiry to solve problems.

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#### Scoring Guide (Work Meets Expectations If):

Success Criteria:

Exit slip response is appropriate to prompt

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#### Instructional Strategies:

Learning Target: Today we are learning to collaborate through discussion to better interpret our findings.

Content:

- Link back to Scientific Investigations and Close Active Reading articles read and to previous group discussions.
- Review behaviors and expectations of participating in group discussions, both as speaker and listener.
- Review steps of the writing process.
- Discourse- constructing meaning, sharing and recording thinking.

Performance of Understanding: Exit Slip – student reflection on day’s learnings of content and reflection on collaboration.

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**READYING AS A WRITER:** Ability to explain the mode and text structure, the rubric, and link discussions to the writing task (SL5.1).

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### LIST

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What are important elements of informational writing?

Create a list of success criteria that you need to meet.

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#### Scoring Guide (Work Meets Expectations If):

Success Criteria:

Fully developed Success Criteria

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#### Instructional Strategies:

Learning Target: Today we are learning to create and use success criteria to focus our work.

- Link back to teaching task, rubric and notes from Scientific Investigations and Close Active Reading.
  - Link back to class charts from "Preparing for the Task."
  - Review behaviors and expectations for working efficiently through the writing process.
- Performance of Understanding: List of Success Criteria
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## *Writing Process*

**PLANNING:** Ability to develop a line of thought and text structure in which ideas are grouped logically and appropriate to task, audience and purpose and relevant to completing informational/explanatory writing (W5.4).

### **OUTLINE**

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Create an outline based on your notes and reading in which you state your thesis, sequence your points, and note your supporting evidence.

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#### **Scoring Guide (Work Meets Expectations If):**

Success Criteria:

- Creates an outline or organizer.
  - Supports controlling idea. Uses evidence from Scientific Investigations and Close Active Reading.
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#### **Instructional Strategies:**

Learning Target: Today we are learning to organize our ideas using an outline.

Content:

- Provide and teach one or more examples of outlines or organizers.
- Invite students to generate questions in pairs about how the format works, and then take and answer questions.

Performance of Understanding: Student created outline

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**ESTABLISHING FOCUS:** Ability to write a thesis statement (W5.2).

### **SHORT CONSTRUCTED RESPONSE**

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Write a statement of your thesis that both addresses the teaching task prompt and includes the “map,” or sequential list, of key evidence points from Scientific Investigations and Close Active Reading with which you will support the thesis.

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#### **Scoring Guide (Work Meets Expectations If):**

Success Criteria:

- Addresses the teaching task prompt
  - Is not too broad to support using the texts
  - Includes the map or plan of evidence
  - Is written fluently
- 

**Instructional Strategies:**

Learning Target: Today we are learning to write a thesis statement.

Content:

- Use several examples of strong thesis statements as models. Have students discuss previously taught characteristics that make these effective.
- Have students compose their thesis statements on a white board.
- Allow students to work in pairs or triads to provide peer feedback.
- Have students share out their thesis statements.
- Have students transpose their thesis statements from the white board to the outline.

Performance of Understanding: Complete thesis statement in your notebook.

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**DEVELOPMENT 1:** Ability to: • write an initial draft of an opening paragraph that introduces the topic and provides a focus (W5.2); • link ideas within and across categories of information using words, phrases, and clauses (W5.2); • use precise language and domain-specific vocabulary (W5.2).

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**SHORT CONSTRUCTED RESPONSE**

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Review the task and your thesis statement. Use your outline to write an opening paragraph that includes:

- o a hook/lead,
  - o background information,
  - o and thesis statement, including the main points for your body paragraph(s) logically organized.
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**Scoring Guide (Work Meets Expectations If):**

Success Criteria:

- Writes an opening paragraph
  - Includes a hook/lead
  - Includes background information
  - Includes a thesis statement
  - Is cohesive
  - Includes appropriate transitions
  - Uses precise language
  - Includes main points to be addressed in the body
  - Writes in readable prose
- 

**Instructional Strategies:**



Learning Target: Today we are learning to write an effective opening paragraph.

Content:

- Use an example of a well-written opening paragraph to identify and explain the key features.
- Discuss the use of a hook, lead, using a direct quote, or thought-provoking question
- Identify transitional words used in the exemplar piece.
- Have students reread the teaching task.
- Have students reread their thesis statements.
- Have students review their outline, focusing on the opening paragraph. • Have students use their outline to write the opening paragraph.

Performance of Understanding: Opening Paragraph

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**DEVELOPMENT 2:** Ability to: • construct an initial draft of the body paragraphs which develops the topic with relevant facts, definitions, concrete details, quotations and examples from print and digital sources (W5.2, W5.8); • link ideas within and across categories of information using words, phrases, and clauses (W5.2); • use precise language and domain-specific vocabulary (W5.2).

### LONG CONSTRUCTED RESPONSE

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Product: Initial Draft of Body Paragraph(s)

Prompt: Write an initial draft of the body paragraph(s) to include:

- a topic sentence,
  - transitional/linking words,
  - supporting evidence and examples from Scientific Investigations and Close Active Reading
  - details/explanation
  - and closing/closure statement(s)
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#### Scoring Guide (Work Meets Expectations If):

Success Criteria:

- Writes an initial draft of the body paragraph(s)
  - Includes a topic sentence and transitional/linking words
  - Uses Scientific Investigations and Close Active Reading to provide experience-based and text-based evidence and examples, details/explanation, and closing/closure
  - Is cohesive
  - Uses precise language
  - Writes in readable prose
- 

#### Instructional Strategies:

Learning Target: Today we are learning to write our body paragraphs.

Content:

- Use an example of a well-written body paragraph to identify and explain the key features.
- Identify transitional words and phrases in example paragraph.

- Have students use their outline to write the body (development) paragraph(s).

Performance of Understanding: Body paragraphs based on outline

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**DEVELOPMENT 3:** Ability to: • link ideas within and across categories of information using words, phrases, and clauses (W5.2); • use precise language and domain-specific vocabulary (W5.2); • construct an initial draft of a concluding statement or section related to the information presented (W5.2).

### LONG CONSTRUCTED RESPONSE

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Product: Closing Paragraph

Prompt: Write an initial draft of the closing paragraph that aligns/matches the opening paragraph (introduction) and brings closure to the essay.

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#### Scoring Guide (Work Meets Expectations If):

Success Criteria:

- Writes an initial draft of the closing paragraph that aligns with the opening paragraph (introduction)
  - Brings closure to the writing task
  - Writing does not “trail off”
  - Ties the piece together
  - Is legible
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#### Instructional Strategies:

Learning Target: Today we are learning to draft our closing paragraph.

Content:

- Use an example of a well-written closing paragraph to identify and explain the key features.
- Explain how the opening and closing paragraphs act as bookends of the writing product.
- Identify transitional words and phrases and domain specific words in example paragraph.
- Model brainstorming summary sentence(s) for the concluding paragraph. Model using a direct quote, referring back to the hook or leaving the reader with a thought-provoking question/statement to provide closure. Allow students time to discuss and write summary sentence(s).
- Have students use their outline to write the closing paragraph(s).

Performance of Understanding: Draft of closing paragraph

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**REVISION 1:** Ability to develop a clear and coherent line of thought which responds to the prompt and maintains focus on developing all aspects of the task steadily throughout the piece (W5.4).

### LONG CONSTRUCTED RESPONSE

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Refine composition's analysis, logic, and organization of ideas/points. Use evidence from Scientific Investigations and Close Active Reading carefully, with accurate citations where necessary. Decide what to include and what not to include.

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**Scoring Guide (Work Meets Expectations If):**

Success Criteria:

- Provides complete draft with all parts.
  - Supports the opening in the later sections with evidence from Scientific Investigations and Close Active Reading and citations.
  - Improves earlier edition.
  - Evidence of revision
- 

**Instructional Strategies:**

Learning Target: Today we are learning to revise to maintain a strong line of thought and focus.

Content:

- Sample useful feedback that balances support for strengths and clarity about weaknesses.
- Assign students to provide each other with feedback on those issues using the TSAR strategy (Think, Share, Advise, Revise)

Performance of Understanding: Revised draft

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**REVISION 2:** Ability to use words, sentence patterns and knowledge of language (verb tense) to refine and strengthen the development of informational/explanatory writing (W5.2, W5.4, W5.5, W5.10, L5.1).

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**LONG CONSTRUCTED RESPONSE**

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Products:

- Peer Review Checklist
- Revised Piece

Prompt:

- Complete the Peer Review Checklist for your partner.
  - Use feedback from your partner to revise your work by neatly and clearly making minimal changes on your draft, OR if significant changes need to be made, write a new draft that incorporates the changes and turn it in with the first draft.
- 

**Scoring Guide (Work Meets Expectations If):**

Success Criteria:

- Completes Peer Review for partner
- Demonstrates use of revision strategies for clarity, logic and cohesion of claim and line of thought, appropriate to audience and purpose
- Completes draft(s)

- Writes in readable prose
- 

**Instructional Strategies:**

Learning Target: Today we are learning to revise for improved word choice, sentence patterns, and formal language.

Content:

- Model using the Peer Review Checklist.
- Have partners use Peer Review Checklist to provide feedback to one another.
- Have students use the feedback to revise their essays.

Performance of Understanding: Revised draft.

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**EDITING:** Ability to demonstrate command of conventions of standard English grammar and usage; capitalization, punctuation and spelling when writing and speaking (L5.1, L5.2).

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**LONG CONSTRUCTED RESPONSE**

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Edit draft to have sound spelling, capitalization, punctuation, and grammar. Adjust formatting as needed to provide clear, appealing text.

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**Scoring Guide (Work Meets Expectations If):**

Success Criteria:

- Provides draft free from distracting surface errors.
  - Uses format that supports purpose.
- 

**Instructional Strategies:**

Learning Target: Today we are learning to edit our draft using appropriate editing marks.

Content:

- Briefly review selected skills that many students need to improve.
- Teach a short list of editing marks.
- Assign students to proofread each other's texts a second time.

Performance of Understanding: Edited draft.

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**COMPLETION:** Ability to submit final piece that meets expectations.

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**SHORT CONSTRUCTED RESPONSE**

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Turn in your complete set of drafts, plus the final version of your piece and reflect in your notebook on the following:

What have you learned about our topic?

What elements of the rubric do you think you have done well and which do you need to improve upon?

How can you improve your work process?

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**Scoring Guide (Work Meets Expectations If):**

Success Criteria:

- Fits the “Meets Expectations” category in the rubric for the teaching task.
  - Reflects on each question in notebook
- 

**Instructional Strategies:**

Learning Target: Today we complete our final version of our piece and reflect on our work.

Performance of Understanding: Reflection on Learning, Performance, Process

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## Resources

### *Uploaded Files*


 [SampleScienceNotebook.docx](#)

([http://literacybytechnology.s3.amazonaws.com/teacherresourceuploads/36619/1504055129\\_Jan\\_01\\_2014\\_205754356.docx](http://literacybytechnology.s3.amazonaws.com/teacherresourceuploads/36619/1504055129_Jan_01_2014_205754356.docx))

This sample notebook format provides a framework for students to record notes from Scientific Investigations and Close Active Reading. It also prompts students to utilize the CPR protocol by labeling their Close Active Reading Notes with a "C" (Confirms your thinking in your Science Investigation notes, a "P" (causes you to ask Probing questions), or "R" (causes you to Reflect on your learning). Please feel free to adapt this format as needed.

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### *Keywords*

 Fair test

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 Controlled experiment

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 Independent Variable

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 Dependent variable

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 Variable

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 Inquiry

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### *Links\**

\* These Lexile measures were computed automatically and did not undergo human review. They are not certified measures and should not be published or recorded in any way.

### *Other Resources*

 Scientists Solve Mystery Of Disappearing Salt Marshes

<http://www.npr.org/2012/10/18/163132026/scientists-solve-mystery-of-disappearing-salt-marshes>  
(Lexile 810L)

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 Dean Kamen: Portable Medical Technology and?Human Transportation Technology

<http://web.mit.edu/invent/iow/kamen.html> (Lexile 1290L)

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 Scientists Seek to Solve Oystercatcher Mystery – and You Can Watch Online

<http://web.ncsu.edu/abstract/science/wms-simons-oystercatcher/> (Lexile 1330L)

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 FOSS Science Stories: Variables

Students will utilize the following selections from FOSS Science Stories: Variables o What Scientists Do (Lexile 560L) o Swinging through History (Lexile 900L) o Sink or Swim? (Lexile 950L) o Science in the Bathtub (Lexile 600L) o Airplane Basics (Lexile 800L) o Experimental Designs (Lexile 930L) o Great Names in Aviation History (Lexile 1040L) o Build Your Own Paper Airplane (Lexile 1030L) o Flingers (Lexile 1110L) o Prove It! (Lexile 880L)

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## Section 4: What Results?

Classroom Assessment Rubric	
<b>Not Yet</b>	
<b>Focus</b>	Attempts to address prompt but lacks focus or is off-task.
<b>Reading/Research</b>	Attempts to present information relevant to prompt.
<b>Controlling Idea</b>	Controlling idea is weak and does not establish a purpose and/or address a research question.
<b>Development</b>	Tends to retell rather than present information in order to answer questions, solve problems; lacks details to develop topic. *L2 Implications are weak or not relevant to topic. L3 Does not identifies a relevant gap or unanswered question.
<b>Organization</b>	Applies an ineffective structure; composition does not address requirements of the prompt.
<b>Conventions</b>	Demonstrates a weak command of standard English conventions; lacks cohesion; language and tone are inappropriate to audience and purpose.
<b>Meets Expectations</b>	
<b>Focus</b>	Addresses prompt with a focused response.
<b>Reading/Research</b>	Presents and applies relevant information with general accuracy.
<b>Controlling Idea</b>	Establishes a controlling idea that states the main purpose and/or question for the tasks. L2 Addresses the credibility of sources.
<b>Development</b>	Presents sufficient information in order to examine or convey topics or issues, answer questions, solve problems; identifies salient themes or features; explains key information with sufficient detail. *L2 Discusses relevant implications to topic. L3 Identifies a gap or unanswered question.
<b>Organization</b>	Applies a generally effective structure to address specific requirements of the prompt.
<b>Conventions</b>	Demonstrates a command of standard English conventions and cohesion; employs language and tone appropriate to audience and purpose.

Classroom Assessment Task
No Classroom Assessment Task for this module

Exemplar Work
<i>Uploaded Files</i>



*Comments*

Author Notes

Other Comments