Writing an Informational Text Using Multiple Sources

4th Grade

Created for the Reading Writing Project 2016-17 by

Tara Greene, Alicia Kurtz, and Becky Hamilton

Appoquinimink School District

Unit Overview

This fourth grade unit teaches ELA skills through a science texts. Students first learn to make inferences and support them with text evidence. Next, they categorize information from a science text as either “what” happened or “why” it happened. Students then read a second text and compare its information to the first. Finally, they learn specific formatting and organizational strategies and write an informational article using information from both texts.

Following the instructional portion of the unit, students independently read two texts and view an informational video about hurricane technology and use the three sources to write an informational text about improvements in hurricane technology.

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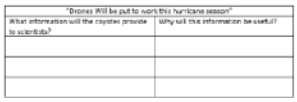
PLANNING CHART #1

School: Silver Lake Elementary School

Questions	Standard	DoK	Know [Which concepts/skills will students need to know in order to complete the questions/full write?]	Do [What is the question/full write asking students to do?]
Question 1: The technology explained in source 1 and source 2 is used to predict different aspects of a hurricane. Using information from both sources, explain how the purposes of these types of technology are different.	**RI.4.9** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. **W.4.7** Conduct short research projects that build knowledge through investigations of different aspects of a topic. **W.4.8** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.	3	• Choosing relevant text evidence • Making inferences based on text • Identify relevant information • Take notes • How to refer to sources • Focus research around a topic that is provided.	• Incorporate evidence from two sources • Infer purposes of technology • Compare purposes of technology • Support responses with evidence • Categorize information • Take Notes • List sources • Gather a variety of information about a research topic.
Question 2: Using evidence from all three sources, why is the information gathered from the advanced technology important to the public?	**RI.4.3** Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. **W.4.7** Conduct short research projects that build knowledge through investigations of different aspects of a topic.	3	• Choosing relevant text evidence • Drawing conclusions based on evidence • Identify relevant information • Take notes • How to refer to sources • Focus research around a topic that is provided.	• Draw conclusion based on evidence • Evaluate evidence to determine importance • Explain an idea based on specific textual information • Categorize information • Take Notes • List sources • Gather a variety of information about a research topic.

	W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.			
Question 3: Using the article, "*Drones will be put to work this hurricane season*" complete the chart with information from the text.  "Drones Will be put to work this hurricane season" What information will the coyotec provide to scientists? | Why will this information be useful?	**RI.4.1** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	2	• Making inferences based on text evidence • Choosing relevant text evidence	• Identify relevant text evidence • Make inferences based on evidence • Refer to details and examples in explanations
Full Write: How are advances in technology helping to predict and warn about potentially dangerous hurricanes?	**W.4.2** Write informative/ explanatory texts to examine a topic and convey ideas and information clearly	3	• Format of a newsletter • Purpose of various text features • Difference between information and examples • Structure of a concluding section • Vocabulary specific to hurricanes and technology	• Write a newsletter • Format using text features to guide reader • Develop the topic with details, information, and examples • Provide a concluding statement related to the information presented • Use domain-specific vocabulary to explain the topic

PLANNING CHART #2

School: Silver Lake Elementary School

Standard: **RI.4.9** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.		
Targets	Learning Progressions	Formative Assessment Strategies
• Identify information from two texts on the same topic	• Identify the most important points from two texts for a given purpose • Identify the key/supporting details from two texts for a given purpose	• Comparison table graphic organizer • Checklist/Sort where students match information from one of the texts to the source(s) that it came from. Lesson Link; RI.4.1, RI.4.3, RI.4.9 & W.4.2- (Resources only): https://www.smarterbalancedlibrary.org/content/basic-archaeology-pair-informational-text-assessment-fourth-grade
• Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably	• Integrate information by graphically representing the most important points presented by two texts on the same topic • Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably	
Standard: **RI.4.4** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.		
Targets	Learning Progressions	Formative Assessment Strategies
• Identify context clues to support determination of meaning	• Know the types of context clue • Use text structure to identify context clues for targeted words	Student responses with post-its Lesson Idea Link: https://www.smarterbalancedlibrary.org/content/supporting-inferences-two-lies-and-truth
• Use context clues to determine the meaning of academic and domain-specific words	• Use context clues to determine the meaning of words	Frayer model

Standard:
RI.4.3

Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.

Targets	Learning Progressions	Formative Assessment Strategies
• Explain events, ideas, or concepts in a scientific or technical text, including what happened and why	• Explain how ideas, events, steps are connected • Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.	Graphic organizer
• Use specific evidence from the text to support explanations of events, ideas, or concepts.	• Use specific information to explain what and why key events, ideas, procedures, events happened	

Standard:
RI.4.1
Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

Targets	Learning Progressions	Formative Assessment Strategies
• Refer to details and examples in a text when explaining what the text says explicitly	• Use the combination of explicitly stated information, background knowledge, and connections to the text to answer questions • Use paraphrasing to appropriately reference text rather than copying verbatim • Explain what the text says by making reference to details and examples (evidence) from the text	Student responses with post-its Lesson Idea Link: https://www.smarterbalancedlibrary.org/content/supporting-inferences-two-lies-and-truth
• Refer to details and examples in a text when drawing inferences from the text	• Make inferences about author's decisions and content by making reference to details and examples (evidence) from the text • Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.	

Standard: **W.4.2** Write informative/ explanatory texts to examine a topic and convey ideas and information clearly		
Targets	Learning Progressions	Formative Assessment Strategies
• Introduce a topic and group related information in paragraphs or sections; include formatting	• Identify a topic • List information related to the topic • Organize and group related information together • Identify & demonstrate an appropriate writing format • Write a beginning statement that introduces topic and presents information • Organize sentences into paragraphs • Add formatting where appropriate (heading, bold print, italics, etc.)	• Complete the "Organizing Your Essay" graphic organizer to group related information in sections.
• Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.	• Choose a source to research facts, definitions and details about the topic • Identify information from the source • Differentiate between relevant and irrelevant reasons • Construct sentences from researched information that support the topic • Quote information from the source • Develop the topic with information gathered from sources	• IAB Brief Write #4
• Link ideas within categories of information using words and phrases (e.g., another, for example, also, because).	• Provide examples that connect to the topic • Use linking words and phrases to connect topic and ideas (*another, also, and, but*) • Use linking words and phrases to connect topic and ideas and categorize information • Use linking/ transition words and phrases to connect ideas within categories • Link ideas within categories of information using words and phrases (e.g. *another, for example, also, because*)	• Thumbs Up/Thumbs down (highlighting strategy using linking words chart.)
• Use precise language and domain-specific vocabulary to inform about or explain the topic.	• Identify vocabulary specific to the topic • Use specific relevant vocabulary to inform or explain topic • Use vivid verbs and precise nouns to inform or explain topic • Use precise language and domain-specific vocabulary to inform about or explain the topic	• Frayer model using domain specific vocabulary (4) • Teacher observation on highlighting strategy using domain specific vocabulary.

• Provide a concluding statement or section related to the information or explanation presented	• Recognize closure techniques for creating a concluding statement or section • Write a statement or section that consists of multiple sentences that provide a conclusion related to information and topic • Provide a concluding statement or section related to the information or explanation as presented	• IAB Brief Write #6 (Entire IAB will be taken, and the results of questions 1,2,3, and 5 will be used as pre-assessment for other skills. #4 and #6 apply directly to the skill of writing from evidence.
Standard: **W.4.7** Conduct short research projects that build knowledge through investigations of different aspects of a topic		
Targets	Learning Progressions	Formative Assessment Strategies
• Conduct a short research project that builds knowledge through gathering a variety of information	• Focus research around a question/topic that is provided • Gather a variety of information about the research topic	• Informational essay based on "Rocks" texts
Standard: **W.4.8** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources		
Targets	Learning Progressions	Formative Assessment Strategies
• Recall and gather information from experiences or print and digital sources	• Recall important information from print and digital sources • Gather important information from print and digital sources	• Complete the "Organizing Your Essay" graphic organizer to group related information in sections.
• Take notes and categorize information	• Organize notes and information into categories	
• Provide a list of sources	• Identify sources used in research • List sources used during research	

ELA & LITERACY PERFORMANCE TASK

School/District: Appoquinimink School District
Team Members: Tara Greene, Becky Hamilton, Alicia Kurtz

Title:	Advances in Hurricane Technology Prediction
Grade:	4th
Standards (ELA, Literacy, Content)	**RI.4.1** Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. **RI.4.3** Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. **RI.4.9** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. **W.4.2** Write informative/ explanatory texts to examine a topic and convey ideas and information clearly. A. Introduce a topic clearly and group related information in paragraphs and sections; include formatting, illustrations, and multimedia when useful to aiding comprehension B. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic C. Link ideas within categories of information using words and phrases D. Use precise language and domain-specific vocabulary to inform about or explain the topic E. Provide a concluding statement or section related to the information or explanation presented **W.4.7** Conduct short research projects that build knowledge through investigations of different aspects of a topic. **W.4.8** Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.
DOK:	4
UDL:	Graphic organizers for note taking, videos and text that span the grade level, guided questions to support reading, scaffolded teacher support in a small group setting as needed.
Stimuli (Primary Text):	**Print:** "Drones will be put to work this hurricane season" https://newsela.com/articles/Hurricane-drones/id/4293/ "Bigger computers and better math help predict hurricane strength" https://newsela.com/articles/hurricane-forecasting/id/822/ **Digital:** “Hurricane prediction technology more amazing than ever” https://www.aol.com/article/2015/08/27/hurricane-prediction-technology-more-amazing-than-ever/21227387/
Text Complexity:	“Drones will be put to work this hurricane season” “Bigger computers and better math help predict hurricane strength” [All text falls within the 4-5 grade band range.]

Task Overview:

Part 1:
Students will read two text sources and watch a brief video about advances in hurricane technology prediction.
Students will have access to a notetaking graphic organizer to collect notes from the provided sources.

Part 2:
Students will work individually to write an informational article for the school newsletter about advances in hurricane technology prediction. Students may refer to the graphic organizer, notes, and sources.

Task Directions:

Part 1:

Your Assignment:
You will watch the "*Hurricane prediction technology more amazing than ever" video* (source 1) and read "*Drones will be put to work this hurricane season"* (source 2) and "*Bigger computers and better math help predict hurricane strength"* (source 3). You will take notes on each source using the provided graphic organizer and answer the included guided questions for each. You will then write an informative article for your school newsletter about the advances in hurricane technology prediction.

In order to plan and write your article, you will need to do the following:

- Complete the provided graphic organizer to collect notes from the video and articles
- Answer the guided questions
- Brainstorm and write your article

Directions for beginning:

You will watch source 1 and read sources 2 and 3 about the advances in hurricane technology prediction. Use the sources and the provided graphic organizer to gather notes. You will be able to refer to these notes as you write the informative article in part 2.

Questions:

Answer the following guided questions to aid in your writing:

1. The technology explained in, "*Drones will be put to work this hurricane season*" source 2 and "*Bigger computers and better math help predict hurricane strength*", source 3 is used to predict different aspects of a hurricane. Using information from both sources, explain how the purposes of these types of technology are different.
2. Using evidence from all three sources, why is the information gathered from the advanced technology important to the public?
3. Using the article, "*Drones will be put to work this hurricane season*" complete the chart with information from the text.

"Drones will be put to work this hurricane season"	
What information will the coyotes provide to scientists?	Why will this information be useful?

Part 2: [Writing]
Your Assignment:

How are advances in technology helping to predict and warn about potentially dangerous hurricanes? Write an informative article for your school newsletter that explains advances in hurricane technology prediction. You may use your notes to help you as you write. You must use evidence from the sources in your newsletter.

How your essay will be scored: DOE Writing Rubric: Grade 4 Informative

Task Directions

Part 1:

Your Assignment:
You will watch the "*Hurricane prediction technology more amazing than ever"* video (source 1) and read "*Drones will be put to work this hurricane season"* (source 2) and "*Bigger computers and better math help predict hurricane strength"* (source 3). You will take notes on each source using the provided graphic organizer and answer the included guided questions for each. You will then write an informative article for your school newsletter about the advances in hurricane technology prediction.

In order to plan and write your article, you will need to do the following:

- Complete the provided graphic organizer to collect notes from the video and articles
- Answer the guided questions
- Brainstorm and write your article

Directions for beginning:

You will watch source 1 and read sources 2 and 3 about the advances in hurricane technology prediction. Use the sources and the provided graphic organizer to gather notes. You will be able to refer to these notes as you write the informative article in part 2.

Questions:
Answer the following guided questions to aid in your writing:

1. The technology explained in, "*Drones will be put to work this hurricane season,*" source 2 and "*Bigger computers and better math help predict hurricane strength*," source 3 is used to predict different aspects of a hurricane. Using information from both sources, explain how the purposes of these types of technology are different.

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2. Using evidence from all three sources, why is the information gathered from the advanced technology important to the public?

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3. Using the article, "*Drones will be put to work this hurricane season*" complete the chart with information from the text.

"Drones will be put to work this hurricane season"	
What information will the coyotes provide to scientists?	Why will this information be useful?

Part 2:

Your Assignment:

How are advances in technology helping to predict and warn about potentially dangerous hurricanes? Write an informative article for your school newsletter that explains advances in hurricane technology prediction. You may use your notes to help you as you write. You must use evidence from the sources in your newsletter.

How your essay will be scored: DOE Writing Rubric: Grade 4 Informative

Name:_____ Date:_____

How are advances in technology helping to predict and warn about potentially dangerous hurricanes?

Write an informative article for your school newsletter that explains advances in hurricane technology prediction.

Score:
Development: 4
Organization: 4
Language/Conventions: 4

Performance Task Exemplar: High	**Annotations:**
Title: Hurricanes and Technology	
Paragraph 1: Advances in Technology Advances in technology have enhanced so much, that we will now know when and where a hurricane is going to hit. Now, we will also know how strong a hurricane is going to be, and if we need to evacuate the area or barricade ourselves in our homes. These machines are the minds behind the scenes.	Effectively introduces the topic – advances in technology that help us interpret hurricane force and direction.
Supportive Paragraphs: The Coyote	Subheading that groups related ideas together and is formatted well.
The Coyote is a small pilotless plane, you know a drone? No, it doesn't have four legs and make a howling noise. The Coyote is dropped from 10,000-12,000 feet above the ocean into the eye of the storm and then controlled remotely. The information this drone gives us is very critical. It can provide information on how strong the storm can become. This could tell us if the city or town needs to evacuate. It's purpose is to also spot changes in air pressure to show us what's going on inside of the eye. This could tell us when a hurricane could form or where that hurricane could be moving. The Coyote can only stay in the air for 90 minutes, so all of it's missions have to get done before that.	Includes multiple facts, definitions, and concrete details from the text to describe how the Coyote helps us to interpret hurricanes Use of specific vocabulary – Coyote, drone, evacuate, eye Use of transitions to link ideas within section "This could …. This could …"
The HWRF	Effective transition - "Another piece …"
Another piece of technology that can be used to predict hurricanes is the HWRF. The HWRF is a supercomputer running an improved computer program. This computer can solve up to 213 trillion calculations per second. It used to "only" make 90 trillion calculations per second. The super computer can show us how the storm is constructed. The HWRF has been programmed to use radar information from weather planes to make a 3D view of how the hurricane is constructed. Like the Coyote, it's main goal is to tell how strong a hurricane can be.	Includes definition, concrete details, and facts to describe how the HWRF predicts hurricanes Use of specific vocabulary – supercomputer, calculations per second, radar Effective transition/connection to previous section – "Like the Coyote, …"
Concluding Paragraph: Hurricane-be-gone	Subheading introduces concluding section
The amazingly improved machines have helped us so much to predict weather and	Concluding section clearly relates to the information provided and effectively sums up the essay

prepare for weather appropriately. The advances in technology help us to easily predict when a hurricane can occur and where it can happen. The technology tells us how powerful a hurricane will be. And what's so great about it is that we just have to sit back and relax, because we already know where the hurricane is going and how strong it is!	Full essay clearly focused on the topic

Performance Task Exemplar: Mid-Level	**Annotations:**
Paragraph 1: This is how the advances in technology help to predict and warn about potentially dangerous hurricanes. One of the advances in technology is a coyote. A coyote is a drone. Another one of the advances in technology is a improved computer program.	Introduces the topic clearly **Score:** Development: 3 Organization: 3 Language/Conventions: 2
Supportive Paragraphs: This is what a coyote can do. A coyotes purpose is to spot changes in air pressure. This can help determine how strong a storm can become. Also coyotes can fly into the eye of the storm. The eye is the calmest part of the storm. It is also the most dangerous part. The coyote goes in the eye wall to find the speed of the strongest winds. This should help National Hurricane Center improve predictions. It is to dangerous for any plane with people aboard to fly into the eye of the storm. Also coyotes can fly close to the ocean. Therefore this can help us better understand how hurricanes get thair power from the heat of the ocean's surface.	Uses linking words "Also, therefore" to connect ideas Organization groups ideas about coyotes in one paragraph and the super computer in another Includes facts and concrete details to support the topic Some misuse of homophones "to, thair"
This is what a super computer can do. the computer that runs the program can make up to 213 trillion calculations per second. The super computer and the faster program should be abel to allow the center to better figure out how the storms are constructed. In addition one of the main goals will be to get better at telling how strong a hurricane is. The center has been strugleing for a long time. Also the model has been used for the past six years. But this year, it can accept more information about what is going on in the atmosphere. In addition to that the radar should be abel to capture a 3 D view of how a storm is constructed. That is what a super computer can do.	Some misspellings – "abel, strugleing" Includes transitions to link ideas "Also …, "In addition to that …" Progression of ideas sometimes list-like in identifying what the super computer can do Formatted into paragraphs without subheadings Writing is focused on the topic
Concluding Paragraph: That is how the advances in technology help to predict and warn about potentially dangerous hurricanes.	Provides a concluding sentence related to the information presented

Performance Task Exemplar: Mid-Level	**Annotations:**
Paragraph 1: A long time ago, the technology to predict hurricanes was not that good. But, the technology to predict hurricanes has progressed a lot since then. New technology has been built and is still getting better, saving lives everywhere.	Effectively introduces the topic
Supportive Paragraphs: Some technologies that help predict hurricanes are called Coyotes and Tide. A Coyote is a drone that is dropped out of planes and goes into the hurricane to find out information. In the text, it says, “It will determine how strong a storm could become”. This could help let scientists know about storms earlier, so they can warn the public. In the text it also says, “A main goal will be to find the speed of the strongest winds”, this way they can know if they should evacuate or not.	Develops topic with quotations from the text Provides a definition of Coyote and Tide Includes relevant details and information to develop the topic. Related information is grouped in paragraphs Some use of transitions to link ideas (so, Once again …)
The next technology is a super computer called Tide. In the text it says, “A main goal will be telling how strong a hurricane is”. Once again, they use that information to keep people safe.	Lack of sufficient facts and details to develop topic in the second body paragraph
Concluding Paragraph: With the new technology helping scientists predict and get information on hurricanes, the world is becoming a safer place.	Effective concluding section related to the information presented

Score:
Development: 2
Organization: 3
Language/Conventions: 3

Score:
Development: 2
Organization: 2
Language/Conventions: 1

Performance Task Exemplar: Special Education	**Annotations:**
Paragraph 1: Tecodgy helpes Because They can see how strong the storm will Be. also it will help to see if we need to evacuate the state. Supportive paragraphs: The teolgy they use now is a coyote they go up to 1500 they also messer the air its good to predict the storms. also it gose up to 100 feet in the air they will also send the meserment to the hirrycane company. They will let coyotes lose in hurrycane. They will let them go to see cange in air pressare. also, they see if the storm gets too strong. they will see in a 3 D veiw to see how Big the storm. the forcast also will say were its going to hit. the aerosored was flown when hurricane Ophelia was here it was probly like the coyotes.	Introduces the topic Pronouns somewhat unclear Many misspellings – teolgy, messer, gose, meserment, hirrycane Inconsistent development – some listing of facts and concrete details Misuse of homophone (lose for loose) Frequent errors in capitalization Source of information is unclear Some formatting to develop the topic (intro paragraph and body paragraph) Concluding sentence deviates from the topic

Score:
Development: 2
Organization: 1
Language/Conventions: 1

Performance Task Exemplar: Low Level	**Annotations:**
Once a long time ago the technology was not very good. But then they made a new technology called the coyote the help's a lot. What it does is it goes into the hurricane to the eye of the hurricane so scientist can get a better understanding of what the hurrican is like inside of it and know more about it like how it does so much damage. Also the national hurricane center has two improved tools there jobs are very important. there running an improved computer program to help make the for cast more accuret for the scietist and the people. What do you think scientist should mak to help improve information about the hurrican.	Unclear pronouns Partially identifies the topic (new technology) No formatting to support development Incorrect creation of plural (help's) Frequent spelling errors – mak, hurricane, accuret – missing silent Es Misuse of homophones (there/their) Lack of specific vocabulary Attempts to link ideas between sources "Also …" Provides one fact from each source to develop the topic No sense of closure related to the topic

Scope and Sequence

School: Silver Lake Elementary Grade Level: 4

Lesson/Description	Duration/ # of Days	Standards/Learning Progressions
Lesson 1: "Supporting Inferences with Two Lies and a Truth" Students will preview upcoming vocabulary and then listen to or read a story and provide evidence from the text to support or refute three inference statements from the story. Two inferences are incorrect, or a lie, and one is correct, or the truth. Students find evidence, write it on a post-it note with their name, and post-it to the chart. When the class reviews the evidence, students will be able to see if their evidence confirms the inference or not.	1-2 days/class periods	**Prerequisite** SL.4.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts,* building on others' ideas and expressing their own clearly. RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. **RI.4.4** Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.
Lesson 2: "Fossils: What and Why" Students will have the opportunity to watch a short video around fossils. After the video, the students will have opportunity to read a text source. Students will then sort cards with information from the text into "What Happens" and "Why it Happens".	1-2 days/class periods	**Prerequisite** SL.4.2 Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally. RI. 4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. W.4.8 Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. • Recall important information from print and digital sources • Gather important information from print and digital sources

Lesson 3: "Fossils: Across Two Texts" Students will be introduced to a second text during a close read. They will then be responsible for filling out an "I-Chart graphic organizer with some guided questions on both texts. They will use the "I-Chart" to write an informational article using nonfiction text features to organize their text.	3-4 class periods	**Prerequisite** W.4.2.C Link ideas within categories of information using words and phrases. W.4.2.E Provide a concluding statement or section related to the information or explanation presented. RI.4.9 Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. W.4.7 Conduct short research projects that build knowledge through investigations of different aspects of a topic. W.4.2.A Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., heading), illustrations, and multimedia when useful to aiding comprehension. • Select a topic and gather information to share with an audience • Define common formatting and structures and determine the best structure to organize the information W.4.2.B Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic. W.4.2.D Use precise language and domain-specific vocabulary to inform about or explain the topic.

Lesson 1

Supporting Inferences with Two Lies and a Truth

<table>
<tr>
<td>Learning Progressions for this Lesson:

• Use the combination of explicitly stated information, background knowledge, and connections to the text to answer questions
• Use paraphrasing to appropriately reference text rather than copying verbatim
• Explain what the text says by making references to details and examples (evidence) from the text
• Make inferences about author’s decisions and content by making references to details and examples (evidence) from the text
• Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
• Determine the meaning of unknown words by identifying known parts (root words, Latin and Greek suffixes and prefixes)
• Read and reread sentences, paragraphs, and non-linguistic images in the text to identify context clues
• Use context clues to help unlock the meaning of unknown words/phrases
• Determine the appropriate definition of words that have more than one meaning
• Differentiate between literal and non-literal meaning
• Identify and interpret figurative language
• Describe how figurative language and other language choices enhance meaning
• Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area</td>
<td>Prerequisite Standards:

CCSS.ELA-Literacy.SL.4.1
Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.

Standards:
RI.4.1
Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

RI.4.4
Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.</td>
</tr>
<tr>
<td>Students Will Know:
• Ways to infer from the text</td>
<td>Students Will Be Able To:
• Make inferences using details from the text and background knowledge.</td>
</tr>
<tr>
<td colspan="2">Lesson Essential Question(s):
How can you use information from the text to make inferences?</td>
</tr>
</table>

Delaware Department of Education Reading/Writing Project 2016
Lesson plan format adapted from Learning-Focused Strategies. Thompson, M., Thompson, J. (2008)

Activating Strategy

Preview (as needed):

- https://jr.brainpop.com/readingandwriting/comprehension/makeinferences/

- Have students begin thinking about what they can infer. Students will watch the following video to think about making inferences:
    - http://viewpure.com/PWJZPvpjm2k?start=0&end=0

***Key vocabulary to preview**:*
(All Tier 2 vocabulary)

- decay
- fossil
- preserved
- index
- remains
- widespread
- extinct

Lesson Instruction

Vocabulary Instruction

- Place students into 7 groups. Each group will be given one vocabulary word from the list below:
    - (T2)decay, fossil, preserved, index, remains, widespread, extinct
- Each group will use a Frayer model to determine and display the meaning of their word. Groups will use the text for context clues and dictionaries to determine the meaning of their word.
- Groups will use the Elmo to project and share their Frayer model.
- The vocabulary words will be added to the class chart of definitions to be displayed throughout the unit of study. The Frayer models created by each group will be displayed in the classroom as well.

*Teacher note: During the vocabulary discussions, differentiate with students which words are scientific/content specific. Also, be sure to note which words have multiple meanings (e.g. index, remains, preserved) and will be seen in other contexts. Explain to students that the words have literal meanings, which means that the intended meaning corresponds exactly to the meaning of the individual words.

Learning Activity 1-

Review inferences with the students by giving the following explanation followed by a few examples:

- “Good readers make inferences using text details and background knowledge to figure out information that isn’t present in the words on the page. Making inferences helps us understand and appreciate the author’s message.”
- Display each of the following examples.
    - “When I woke up, there were branches and leaves all over the yard.”
    - “We bought tickets and some popcorn.”
    - “I forgot to set my alarm clock last night.”
    - “A student falls asleep in class.”
    - “One student put her hand in the air.”
- Think-Pair-Share: Allow students time to think about the example before turning and discussing with their partner. Students will work with a partner to verbally develop a logical inference. Have a few students share out their inference. Prompt students to explain how they used the details from the sentence and their background knowledge to make the inference.

Materials Needed:

- 7 Frayer models
- Dictionaries
- Copies of the text, "Uncovering Clues to the Past" (Chapter 2) for each student
- Vocabulary class chart
- Phineas & Ferb Make Inferences -Task Cards

Formative Assessment LA 1: Teacher Observation

Students will be provided with 3 cards for each inferencing task (prompt, correct inference, incorrect inference). Students will use the inference prompt (Ferb) and match it to the correct answer (Phineas).

**When students make an illogical inference, prompt them to cite evidence from the text. The process of referring to the text allows students to self-check their thinking and revise their answer.*

*Teacher note: If your students have a clear understanding of making logical inferences, you may want to use the Phineas & Ferb task cards as an activating strategy. Or, have the students match the logical inference and provide an explanation as to why the incorrect inference is illogical.

Learning Activity 2-

1. Begin by stating the Learning Target: Refer to details and examples in text when drawing inferences from the text.

- Read aloud, "Uncovering Clues to the Past" (Chapter 2). Display the text to show the words and pictures during the read aloud.
- Model making inferences using the graphic organizer throughout Chapter 2.
    - Example: (paragraph 2, page 10) "You may think the Grand Canyon always looks the same. But it is changing all the time. The natural forces that cause weathering and erosion are always changing the rocks. Wind and water are continually breaking down rocks into small pieces and carrying the pieces away." Teacher think aloud - "I read that natural forces are always changing the rocks. **Why is the Grand Canyon changing all the time?**" This question will be recorded on the graphic organizer. Guide students through identifying evidence from the text and prior knowledge to make an inference. Explicitly model paraphrasing to appropriately reference the text rather than copying the text verbatim.

Formative Assessment for LA 2:

- After modeling with at least two inferences, provide students with the following question for students to find evidence from the text and use their prior knowledge to make an inference.
    - **How do natural forces uncover more layers of rock?**

Learning Activity 2- (continued)

- Read aloud the three inferences from the chart:
    - Inference one (lie): **"Scientists have learned from their study of fossils, that sea creatures once lived on land."**
    - Inference two (lie): **"In rare cases, whole animals are found as fossils, because whole animal fossils have already been discovered."**
    - Inference three (truth): **"Wind and weather cover dead plants or animals, which turns them into fossils."**

- Split the class into three groups and hand out the copies of chapter 2: "Uncovering Clues to the Past" along with post-it notes.
- Group 1 will find evidence to prove or disprove inference one on the chart.
- Group 2 will find evidence to prove or disprove inference two on the chart.
- Group 3 will find evidence to prove or disprove inference three on the chart.

** Small group: For students who may have struggled with the formative assessment for LA 2 to find evidence, or may need additional practice, this would be an opportunity to work with them in a small group.*

Materials Needed:

- Copies of the text, "Uncovering Clues to the Past" (Chapter 2) for each student
- Making Inferences graphic organizer for each student
- Chart prepared with the Learning Target at the top and the three inferences.
- Post-it Notes (1 for each student)

Summarizing Strategy:

- Once the students have found evidence for their numbered inference, they place their post-it note on the chart at the front of the room.
- The teacher reviews each inference and the evidence presented for the inference and the class decides if the inference is the "truth" or the "lie." Be sure to review the idea of evidence being words from the text if students present evidence that is not a detail or example from the text.
- After reviewing with students, determine which inferences are "lies" and which inference is the "truth."

Attached Resources:

1. Appendix A: Frayer model graphic organizer (template)
2. Appendix B: Phineas and Ferb Task Cards
3. Appendix C: "Uncovering Clues to the Past" (Chapter 2)
4. Appendix D: Making Inferences graphic organizer

Lesson 2

What and Why?

Learning Progressions for this Lesson:	**Prerequisite Standards:**
• Explain how ideas, events, and steps are connected. • Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. • Use Specific information to explain what and why key events, ideas, procedures, and events happened.	CCSS.ELA-Literacy.SL.4.2 Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
	Standards: **RI.4.3** **Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.** **W.4.8** **Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.**

Students Will Know:	**Students Will Be Able To:**
• Choosing relevant text evidence • Drawing conclusions based on evidence • Identify relevant information • Take notes • How to refer to sources • Focus research around a topic that is provided	• Draw conclusion based on evidence • Evaluate evidence to determine importance • Explain an idea based on specific textual information • Categorize information • Take Notes

Lesson Essential Question(s):

How can I categorize informational text to understand it better?

Activating Strategy:

Students will watch an informational video about fossils. Teacher will facilitate discussion around things they already know about fossils.
https://www.youtube.com/watch?v=oTqWjPWeyN4
(Stop at 4:20)

***Key vocabulary to preview**: index fossils, kaibab layer, Coconino layer*

Lesson Instruction

Learning Activity 1-

Connect back to Lesson 1: Explain to students that as readers of nonfiction text, we often need to make inferences to understand the text better. Another great reading strategy for understanding nonfiction text is to make connections between what happens in the text and why it happens.

Teacher will inform students that they will be looking at an informational text, explaining that in order to understand an informational text, making connections between what happens and why it happens can help the reader understand it better.

Reading of the text can happen in a variety of ways:

1. Whole group close read aloud.
2. Partner read
3. Independent read

Small group accommodations should be made for students who need so with grade-level texts.

Teacher will then facilitate an activity where students are broken into partners or small groups. Each group will be given a placemat and a set of sorting cards. With their sorting cards, students will read aloud textual information and decide if it's WHAT happens, or WHY something happens [great opportunities for connections to cause/effect relationships in informational text].

Materials Needed: ***Text, "Uncovering Clues to the Past", Sorting cards with text from "Uncovering the Past", Sorting Placemat***

Formative Assessment LA 1: Sorting of cards onto placemat into "what happens" and "why"

Summarizing Strategy: Students will then use their sorting placemat to answer the following exit ticket: "How are fossils formed and why are they important?" Have students explain how categorizing this information helped them understand it better.

Formative Assessment (after Lesson 1): IAB Block "Brief Writes"

*Teacher note: The IAB Block, "Brief Writes" can be given as a pre-assessment prior to Lesson 1. The IAB block will provide the following data when given after Lessons 1 & 2:

- Lesson 1: Are students able to refer to details in a text when explaining what the text says explicitly and when drawing inferences from the text? (i.e. – IAB Brief Write # 4 provides students with details about the star fruit. Students will need to refer to the details to further explain how the star fruit is healthy.)
- Lesson 1: Are students able to determine the meaning of general academic and domain-specific words? (i.e. The star fruit provides a "good source of Vitamin C and fiber".
- Lesson 2: Are students able to explain ideas based on specific information in the text? (i.e. The star fruit is healthy because it is low in sodium and fat-free.)
- Lesson 2: Are students able to gather relevant information? (i.e. The notes provided related to the star fruit include relevant and irrelevant information. For example, the star fruit should not be eaten by people with kidney problems does not support the idea that the star fruit is healthy).
- Pre-assessment: The Brief Writes also provide pre-assessment data relating to how students' ability to group related information in paragraphs. (i.e. Brief Write #6 asks students to write a paragraph that concludes a given idea.)

Attached Resources:

1. Appendix E: Notetaking Sheet
2. Appendix F: Task Cards
3. Appendix G: Exit Ticket

Lesson 3

"Fossils: Across Two Texts"

<table>
<tr>
<td rowspan="2">Learning Progressions for this Lesson:

• Identify the most important points from two texts for a given purpose
• Identify the key/supporting details from two texts for a given purpose
• Integrate information by graphically representing the most important points presented by two texts on the same topic
• Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably</td>
<td>Prerequisite Standards:
<u>CCSS.ELA-LITERACY.W.4.2.C</u>
Link ideas within categories of information using words and phrases (e.g., another, for example, also, because).

<u>CCSS.ELA-LITERACY.W.4.2.E</u>
Provide a concluding statement or section related to the information or explanation presented.</td>
</tr>
<tr>
<td>Standards:
RI.4.9
Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.
W.4.7 Conduct short research projects that build knowledge through investigations of different aspects of a topic.
W.4.2.A
Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.
W.4.2.B
Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.
W.4.2.D
Use precise language and domain-specific vocabulary to inform about or explain the topic.</td>
</tr>
<tr>
<td>Students Will Know:
• Choosing relevant text evidence
• Making inferences based on text
• Identify relevant information
• Take notes
• How to refer to sources</td>
<td>Students Will Be Able To:
• Incorporate evidence from two sources
• Support responses with evidence
• Categorize information
• Take Notes
• List sources
• Gather a variety of information about a topic</td>
</tr>
<tr>
<td colspan="2">Lesson Essential Question(s):

How can we use organize information about the same topic from different sources to understand it better?</td>
</tr>
<tr>
<td colspan="2">Activating Strategy
Teacher led review of previous lesson and vocabulary as needed.

Vocabulary Instruction:
• Provide instruction on the following domain-specific words: Protoceratops, paleontologists and sedimentary rock. Provide students with a visual to accompany each of the domain-specific vocabulary words.</td>
</tr>
</table>

- Have students complete a Frayer model to understand the meaning of the words *decomposed* and *excavated*.
    - Check for understanding: Have students write a sentence using the words (decomposed and excavated).

***Key vocabulary to preview**: Protoceratops, Paleontologists, decomposed, sedimentary rock, excavated,*

Lesson Instruction

Learning Activity 1- Teacher will explain that in order to become "experts" on fossils, or any topic, using another source can give us more information, different types of information, etc. Introduce the new text, "Face to Fossil". Explain that in this text, they will be reading an interview with a fossil in order to gain new and different information. Read "Face to Fossil" as teacher sees fit (read aloud, interview read, partner read, etc.).

After reading, teacher will then assign the "I-chart" to students. The chart has three guided questions where students will respond using both sources. (Source 1 says:, Source 2 says:).

***Materials Needed:* Text, "Face to Fossil", I-Chart, Text: "Uncovering the Past"**

Formative Assessment LA 1: Completion of "I-Chart"

Learning Activity 2- Teacher will then pose a series of questions on the smart board. Example: "If I was looking for a detailed description of a protoceretops fossil what source would I use?" Teacher can use an every people response to illicit an answer from students as a group [great resource: Plickers] Students can then follow up their answer with a turn-and-talk to a partner about WHY that source makes the most sense.

***Materials Needed:* Text, "Face to Fossil", I-Chart, Text: "Uncovering the Past"**

Formative Assessment for LA 2: Every people response, turn-and-talk

Learning Activity 3- Teacher will then have students login into Study Island for a self-paced lesson on [**W.4.2.A Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.] They will have the opportunity to work on several examples of how to organize information into related groups.**

***Materials Needed:* Computers, Study Island logins**

Formative Assessment for LA 3: Using their I-Chart, students will then use the information from both sources to write an informational article. They will have to group the related information by including formatting (such as headings) to organize their information.

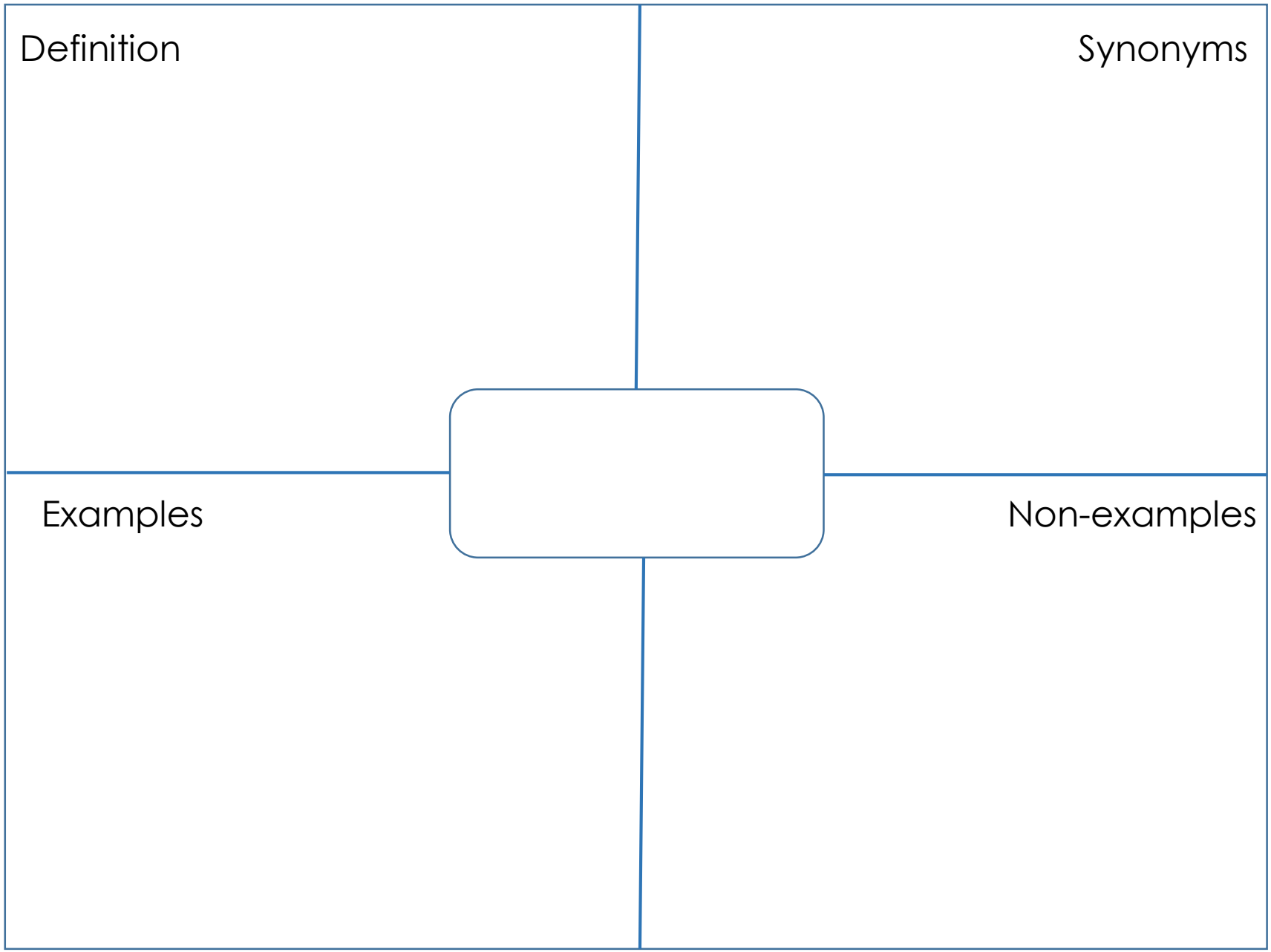
***Teacher Note:** Students will need access to Study Island for the Learning Activity 3. If Study Island is not a resource that is not available, the following is an alternate resource that can be used to provide the instruction:

http://www.beaconlearningcenter.com/WebLessons/WhichWriting/default.htm

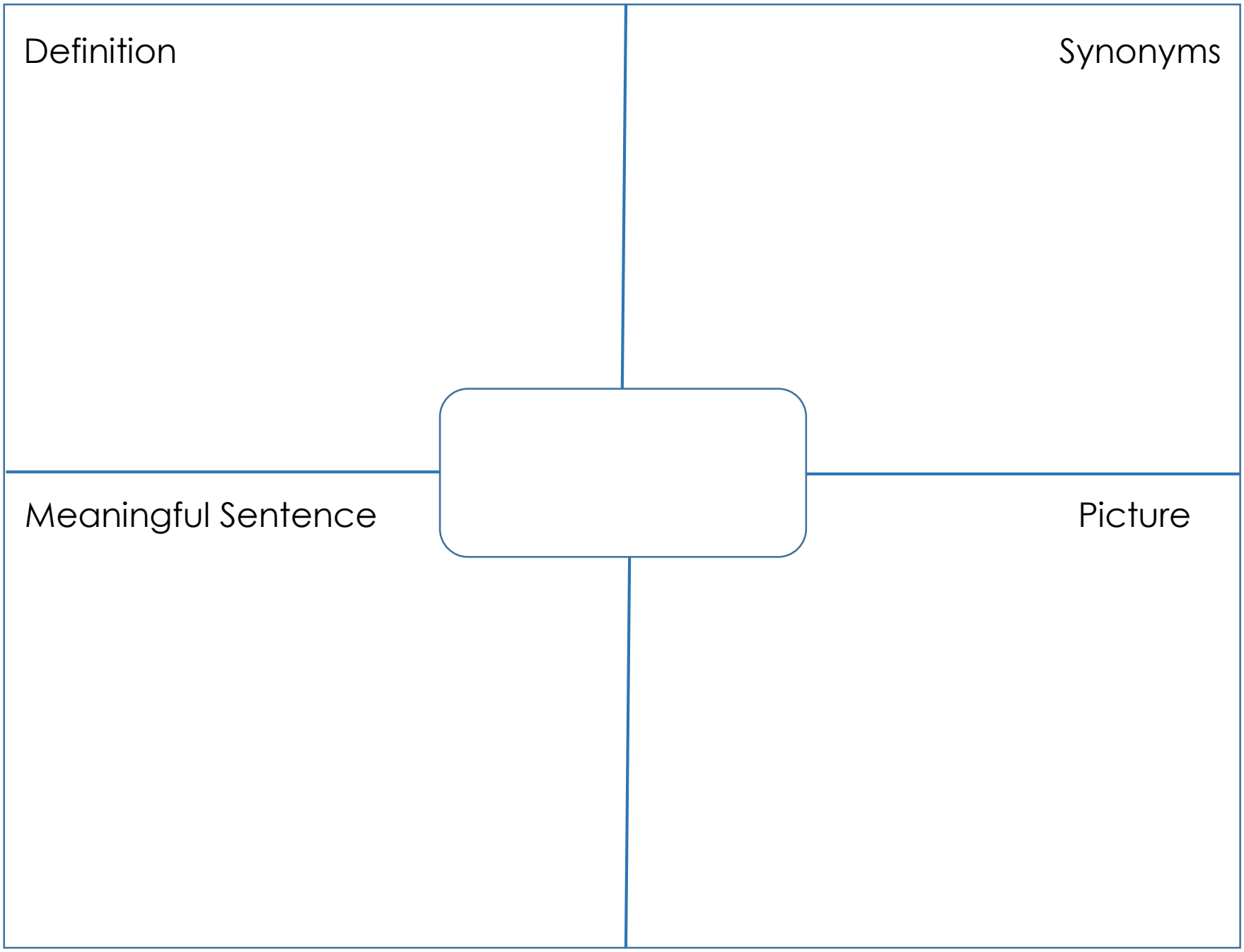
Attached Resources:

1. Appendix H: Text, "Face to Fossil"
2. Appendix I: Inquiry Chart
3. Appendix J: Article template for student writing

Appendix A



Delaware Department of Education Reading/Writing Project 2016
Lesson plan format adapted from Learning-Focused Strategies. Thompson, M., Thompson, J. (2008)



Delaware Department of Education Reading/Writing Project 2016
Lesson plan format adapted from Learning-Focused Strategies. Thompson, M., Thompson, J. (2008)

Appendix B

Phineas & Ferb

Make Inferences

Print & laminate all materials. Students use the inference prompt (Ferb) and match it to the correct answer (Phineas). To make the task more difficult provide them with all 3 cards (prompt, correct answer, incorrect answer). Cut out card below to keep as title card!

Phineas & Ferb
Make Inferences

SpeechRoomNews.blogspot.com

SpeechRoomNews.blogspot.com

1  Before I go outside, I put on my coat and hat.	1  It must be cold outside.	1  It is a warm sunny day.
2  I didn't bring my homework to school today.	2  My teacher will be disappointed in me.	2  My teacher will send me to the principal.
3  I see a fire truck on the street.	3  There must be some type of emergency.	3  There must be a cat stuck in a tree.

4  Your mom is late to pick you up from school.	4  She probably got stuck in traffic or had car trouble.	4  Mom wants me to go home with my teacher today.
5  You get fired from your job.	5  You did something wrong at work.	5  You will probably get a raise.
6  Cameron isn't at school today.	6  He must be out of town or sick.	6  Cameron switched schools.

7  You have a substitute teacher.	7  Your teacher is sick today.	7  The substitute teacher will be your teacher for the rest of this year.
8  Ali fell off her bike.	8  Ali lost her balance.	8  Ali didn't have on her helmet.
9  The dog is standing by his food bowl.	9  The dog is hungry or thirsty.	9  The dog loves you.

10  Sam came inside holding a wet umbrella.	10  It's raining outside.	10  Sam's jacket is wet.
11  Lily has a cast on her leg.	11  Lily broke her leg.	11  Lily fell off a horse.
12  Blake is crying and holding his elbow.	12  Blake hurt his arm.	12  Blake got beat up by a bully.

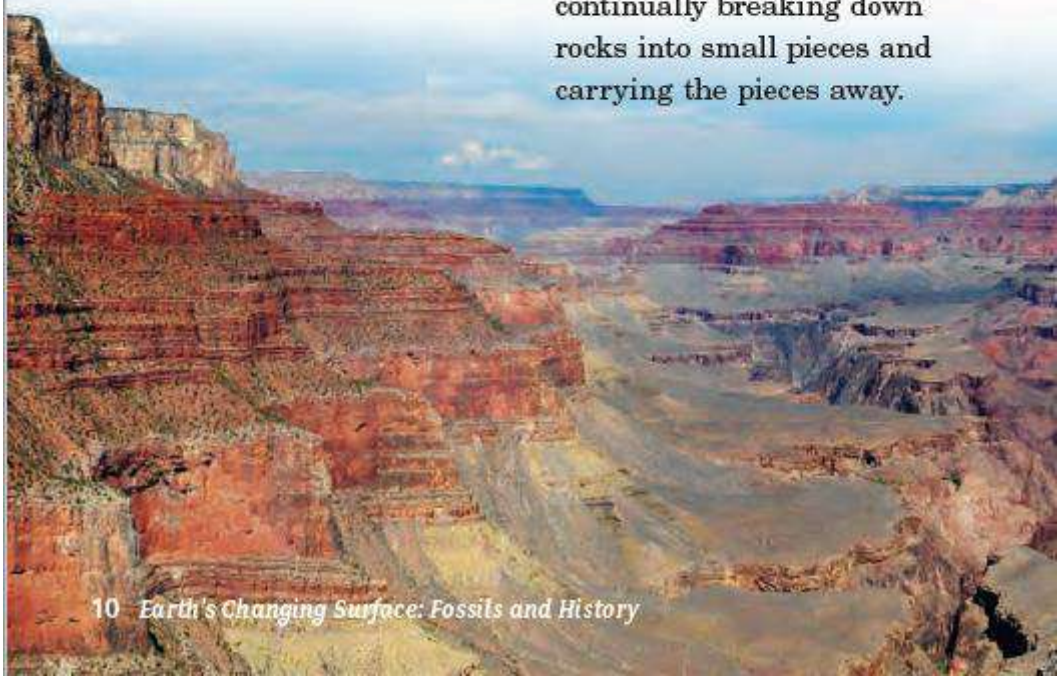
Appendix C

CHAPTER 2

Uncovering Clues to the Past

The Grand Canyon in Arizona is one of the best places on Earth to see amazing layers of rock. The miles of rocks along the canyon walls contain clues to millions of years of Earth's history.

You may think the Grand Canyon always looks the same. But it is changing all the time. The natural forces that cause weathering and erosion are always changing the rocks. Wind and water are continually breaking down rocks into small pieces and carrying the pieces away.



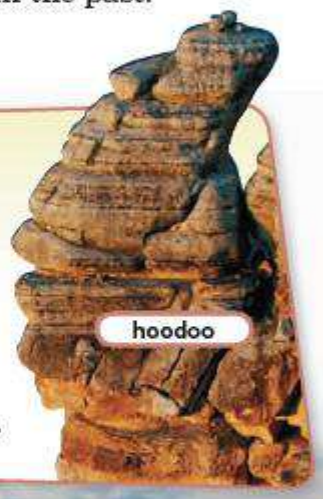
10 *Earth's Changing Surface: Fossils and History*

Ice also causes changes in the Grand Canyon's walls. Water creeps into small cracks in the rocks and freezes. When water freezes, it expands, or gets larger. This pushes against the rock and can break the rock into smaller pieces.

The force of gravity often takes over. Gravity causes rocks to fall down. Falling rocks can strike other rocks and cause them to break apart. As natural forces uncover more layers of rock, scientists get more clues to life in the past.

By The Way...

Hoodoos in the Grand Canyon are caused by two types of weathering. Chemical weathering changes the rock's chemical make up. Mechanical weathering changes the rock's size and shape.



KEY IDEA Moving water, wind, ice, and the force of gravity continually change Earth's surface.

What Fossils Tell Us

When plants and animals die, their bodies usually decay or are eaten. But sometimes a dead plant or animal is quickly covered in sediment. If this happens, at least part of the plant or animal may become a fossil.

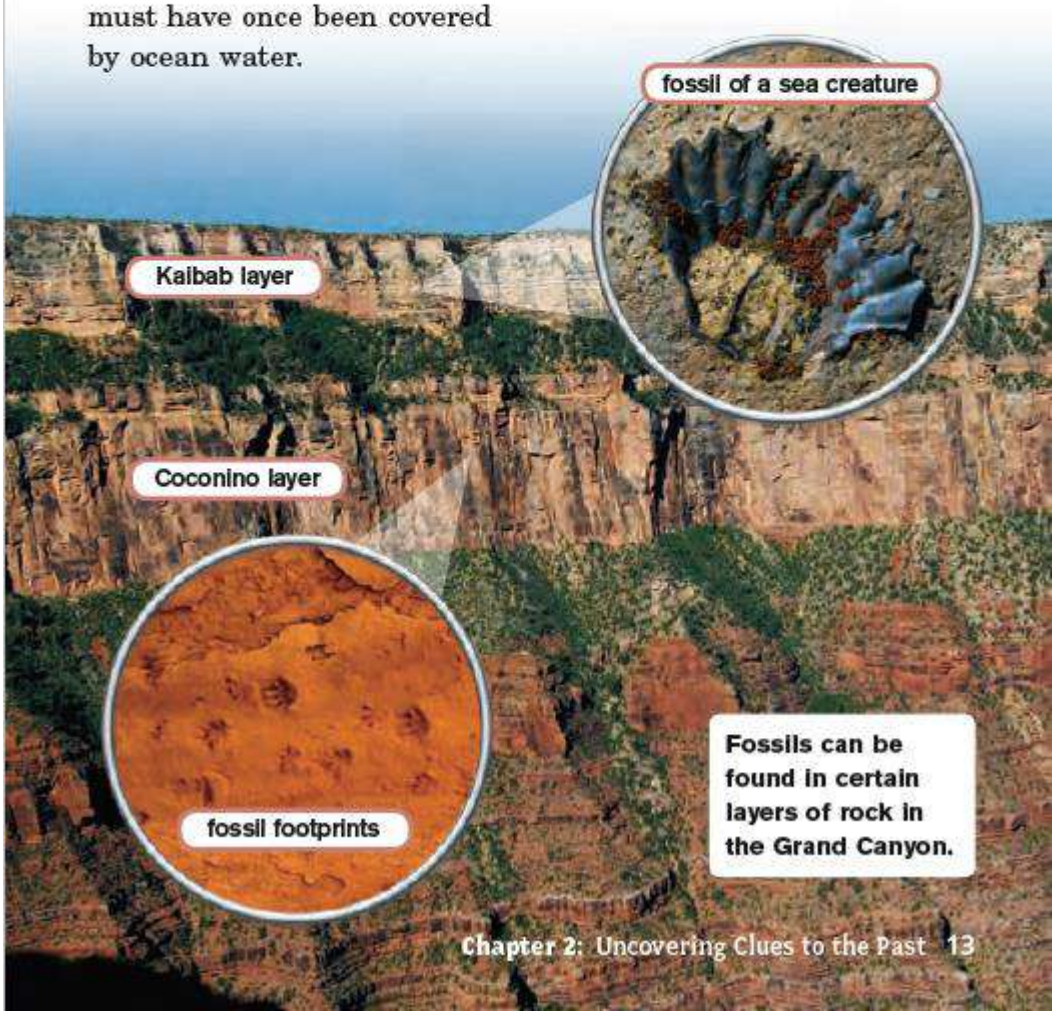
Any sign of living things from long ago is a fossil. Hard body parts such as teeth and bone are most often preserved as fossils. But a footprint preserved in rock can be a fossil, too. Fossils tell us a lot about living things in the past.

▼ **In rare cases, whole animals are found as fossils. This *Tyrannosaurus rex* fossil was found in South Dakota in 1990.**

SHARE IDEAS With a friend, **discuss** how fossils become part of sedimentary rock.

Fossils can also tell us other things. Sometimes they provide clues to what a certain area was like in the past. For example, in an area at the top of the Grand Canyon, called the Kaibab layer, fossils of sea creatures have been uncovered. This tells scientists that this area must have once been covered by ocean water.

One of the layers below the Kaibab layer shows different kinds of fossils. In the Coconino layer, footprints of animals are found. Scientists think these footprints were made in sand. This means that at least part of this area was probably hot and dry when these animals were alive.



Index Fossils

Sometimes a fossil tells us about the age of the rock it was found in. **Index fossils** are the remains of living things that were once widespread during a part of Earth's history.

For example, sea creatures called trilobites once lived all around the world. But then all the trilobites became extinct, or died out.

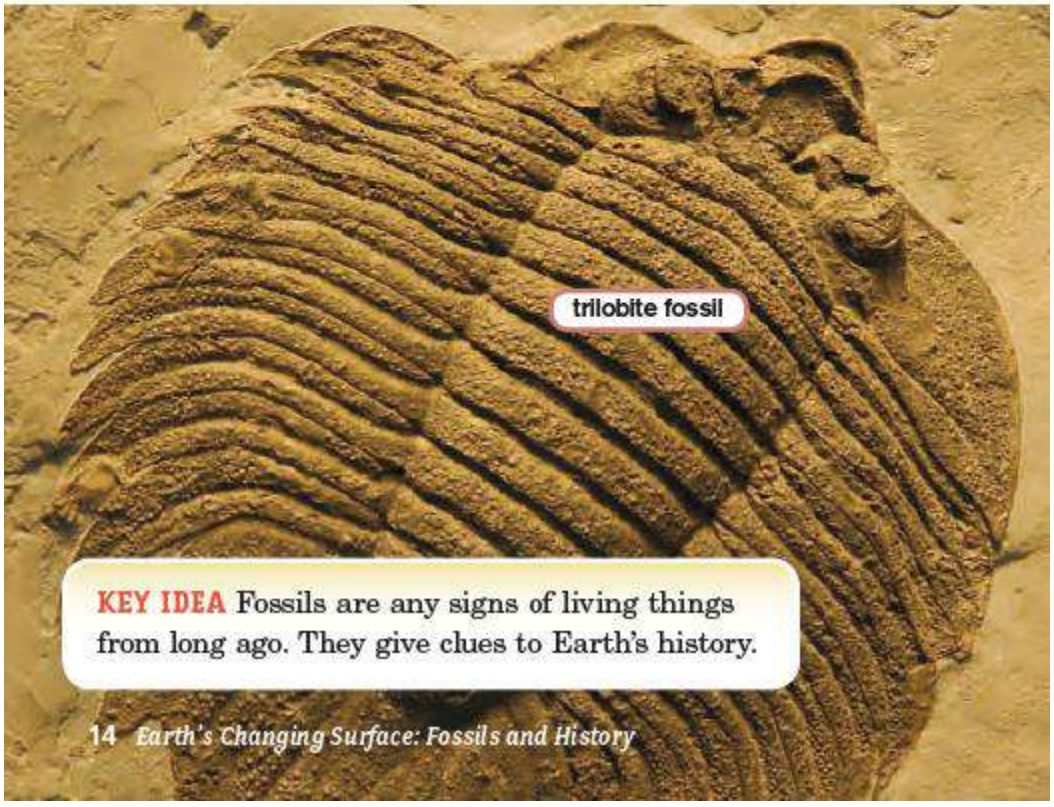
Scientists now think that any rocks with trilobite fossils probably date back to the same period in Earth's history.

Explore Language

GREEK WORD ROOTS

tri- (three) + *lobos* (lobe; rounded part of the body) = **trilobite**

index fossils – remains of living things that were widespread during a certain period of Earth's history



KEY IDEA Fossils are any signs of living things from long ago. They give clues to Earth's history.

Appendix D

Name _____#____ Date_____

MAKING INFERENCES

Questions	Evidence from Text	Prior Knowledge	My Inference

Cite evidence from the text + Use your prior knowledge = Make an Inference

Appendix E

Bill Nye the Science Guy: Fossils
Note Taking Sheet

Directions: As you watch the video, jot down anything important that you think you would need to know about fossils.

Remember, as a note taker, you do not need to use full sentences. It can be a bulleted list, a fact put into your own words, etc.

Appendix F

The Grand Canyon is changing all the time.	Ice also causes changes in the Grand Canyon's walls.
The natural forces that cause weathering and erosion are always changing the rocks.	Water creeps into small cracks in the rocks and freezes. When water freezes, it expands or gets larger. This pushes against the rock and can break the rock into smaller pieces.

An area must have been covered by ocean water.	Part of this area was probably hot and dry when these animals were alive
Fossils of sea creatures have been uncovered.	Footprints of animals are found, scientists think these footprints were made in sand.

Falling rocks can strike other rocks and cause them to break apart.	Part of the plant or animal may become a fossil.
Gravity causes rocks to fall down.	A dead plant or animal is quickly covered in sediment.

Appendix G

Lesson 2: "Fossils: What and Why" Name: _____
Date:_____

Exit Ticket

Using your placemat and, "Uncovering Clues to the Past" text, explain how fossils are formed and why they're important.

_____

_____

_____

_____

_____

_____

Lesson 2: "Fossils: What and Why" Name: _____
Date:_____

Exit Ticket

Using your placemat and, "Uncovering Clues to the Past" text, explain how fossils are formed and why they're important.

_____

_____

_____

_____

_____

_____

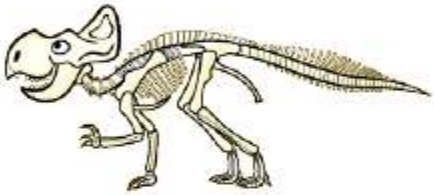
Appendix H

Face to Fossil

This text is provided courtesy of OLogy, the American Museum of Natural History's website for kids.

Hi, paleo pals. I'm Deena Soris.

My guest today is a fossil of a *Protoceratops*. This dashing dino was dug up in the Gobi Desert in Mongolia during the 1920s. Paleontologists named this kind of dinosaur *Protoceratops andrewsi* (pro-toh-SER-uh-tops an-DROO-zee) in honor of the last name of the guy who led the expeditions that discovered it — Roy Chapman Andrews. Please slap your bony hands together for my very close fossil friend..."Proto Andy!"



PROTO ANDY: Thanks. It's great to see you again, Deena.

What Were You like When You Were Alive?

DEENA: You look fabulous. How old are you?

PROTO ANDY: I'm about 80 -

DEENA: (interrupting) 80? That's not very old for a dinosaur. My grandmother is 95, so what's the big —

PROTO ANDY: (interrupting back) I wasn't finished. I'm 80 million years old. But I feel like I'm only 10 million. It's all in your attitude, Deena.

DEENA: What did you look like when you were alive?

PROTO ANDY: I've heard the scientists say that 80 million years ago I used to be the size of a very large pig and might have weighed as much as 500 pounds.

DEENA: Were you fast on your feet?

PROTO ANDY: No one knows. Paleontologists haven't found any *Protoceratops* footprints yet. However, *Protoceratops* were a lot slower than some carnivores that ate us for lunch because we have such short legs.

DEENA: How do scientists guess an extinct dinosaur's speed?

PROTO ANDY: Sometimes scientists can estimate a dinosaur's speed by comparing its fossilized legs with the legs of similar animals that are alive and running.

How Did You Become a Fossil?

DEENA: So what happened? One day you're happily munching away on thick, tough plants, and the next you're history?

PROTO ANDY: Some paleontologists think one of those nasty Gobi "sand avalanches" got me. Heavy rainstorms can cause the sand to flow like a mud slide. It could have been worse. Okay, I was killed. That's the bad news. The good news is that the sand buried me before other animals could devour me. And now, I help build scientific knowledge!

DEENA: How did you go from being a "Gobi sandwich" to a fossil?

PROTO ANDY: After I was buried, my body decomposed very slowly underground.

DEENA: Yuck!

PROTO ANDY: Happens to the best of us. Eventually, all the fleshy parts of my body were gone. Over millions of years, water in the nearby rocks surrounded my bones. Some of the minerals in the water replaced parts of my bones. Then I became a fossil. I was lucky that my bones were not distorted by all the heat and pressure.

DEENA: Your bones were underground for 80 million years. How did the paleontologists find you?

PROTO ANDY: They just ran around the Gobi shouting, "Here, Proto-Proto! Here, Proto-Proto!"...Just kidding.

DEENA: Come on, I'm serious. What happened?

PROTO ANDY: In the Gobi, the paleontologists know to look for fossils in sandstone, a kind of sedimentary rock. Because of erosion — forces like rain, hail, and wind — some of my bones stuck out of the ground a bit. Scientists knew that once they found my exposed foot, the chances were good that the rest of me was buried not far away.

How Did You Get to New York City?

DEENA: How did they get you to New York City?

PROTO ANDY: First they excavated me. Of course, I was buried, so I couldn't see what was going on, but they took a lot of pictures.

My skeleton is quite fragile, and the paleontologists didn't want to damage me. So, they put glue on me and cleared away the sand near me using picks, chisels, dental tools, and some brushes. It didn't hurt a bit.

DEENA: Did they remove you from rocks in the desert?

PROTO ANDY: Nah, that would have taken too much time. Plus, they could have damaged my lovely bones. What they did instead was use a large knife to carve out a large chunk of rock around my skeleton. Then they put a jacket on me.

DEENA: Were you cold?

PROTO ANDY: No, a different kind of jacket. In paleontology, a "jacket" is the name for the hard stuff they wrapped around me to keep me safe. They put toilet paper over me to protect my bones. Then, they wrapped me up with bandages and plaster. I looked like a mummy.

DEENA: Then, what happened?

PROTO ANDY: They put a number on my plaster jacket, wrote notes in their field book, and then put me in a large box. Next, they stuck me on a truck, then a train, and finally a boat. During the trip, my fossilized bones were packed with sawdust and straw to prevent any damage. They took such good care of me!

DEENA: That was in the 1920s. Is the same method used these days?

PROTO ANDY: Pretty much. Although some of the very special fossils get sent to New York by airplane rather than by boat.

What Do You Do at the Museum?

DEENA: Once you got to the museum, what happened?

PROTO ANDY: People at the museum called "preparators" removed my plaster jacket and cleared away all the rock and sand using dental tools, soft tongue depressors, and a little vacuum. Next, latex rubber molds of my bones were created so that copies could be made.

DEENA: Once you were all cleaned and ready, did they then put you in one of the dinosaur halls of the museum?

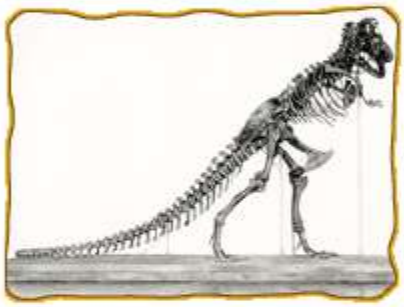
PROTO ANDY: Nope. They stuck me on a shelf in the basement, where I've lived since the 1920s. I used to think, "You drag my bones all the way from Mongolia, and now you're just going to leave me on a shelf? My public awaits me!" Then I learned that over 95% of fossils are never displayed in the exhibition halls. Most fossils are used for research. So, I'm not a performer, but I guess you could say I'm part of the research team.

DEENA: What do they do with you if you're not in the halls?

PROTO ANDY: Scientists here sometimes take us to their offices for study. Occasionally, a scientific illustrator draws pictures of me for a journal of paleontology.

DEENA: When dinosaurs are put in the exhibition halls, how do the scientists decide what position to put the bones in?

PROTO ANDY: It's never easy. Scientists work together with artists to figure out a position that's probably accurate and fun to look at.



DEENA: I heard that the big *T. rex* skeleton got a makeover a few years ago. Why?

PROTO ANDY: At the American Museum of Natural History, the *Tyrannosaurus rex* fossil used to look like that movie monster Godzilla. Once scientists realized that most dinosaur trackways (footprints) have no "drag marks" from their tails, they realized that dinosaurs probably walked with their tails in the air rather than dragging behind them.

This is what the *T. rex* looks like now.

What Does the Name *Protoceratops* Mean?

DEENA: I have a bone to pick with you...

PROTO ANDY: Ouch!

DEENA: Sorry, just an expression. I'm confused about something. You're a ceratopsian dinosaur, right? Your name means "first horned face." Why don't you have any horns?

PROTO ANDY: Are you blind? Don't you see this glorious bump on my nose? All ceratopsians (seh-rah-TOP-see-inz) have it. Okay, so it's not a big, pointy horn like that ceratopsian superstar, *Triceratops*. Man, that guy was an overachiever.

DEENA: Have you met any other ceratopsian fossils at the museum?

PROTO ANDY: *Triceratops* and I have a distant ceratopsian relative called *Psittacosaurus* (sit-TAK-koh-SAW-ris). It was a no-frill dinosaur. It had a curved beak like us – but no frill. That's the name for the bony "thingee" that sticks out of the back of my skull and over my neck.

DEENA: Is it a thrill to have a frill?

PROTO ANDY: You bet. Paleontologists call it a "display structure." This means that we probably used it to threaten each other by showing it off and to recognize other members of our species.

DEENA: What did you eat during the late Cretaceous period?

PROTO ANDY: Once again, I've stumped the scientists!

DEENA: That's not fair. Paleontologists have some clues about your diet.

PROTO ANDY: Well, okay. They've made some clever deductions. My teeth suggest that I probably was an herbivore [UR-bah-vore]. You know, a plant-eater. I used my teeth to slice the skin of thick, tough plants - but they don't know what kind I ate because they haven't found any plant fossil evidence near me. So, my diet is still a little secret.

Do You Have Any Secrets to Share?

DEENA: We're almost out of time. Any secrets you'd like to share with the folks at home?

PROTO ANDY: Here's a shocker. Based on my bones, scientists can't tell if I used to be a dino-guy or a dino-girl.

DEENA: How embarrassing!

PROTO ANDY: Tell me about it. Scientists have found two different types of *Protoceratops* skulls. One has a low face and inclined frill, and the other has a deeper snout with a small horn-like bump above the nose and a more vertical frill. Unfortunately, it's impossible to know for sure which skull is male and which is female.

DEENA: We've come to the end of another edition of *Face-To-Fossil*. Proto Andy, you've been wonderful. This is Deena Soris saying farewell to all my paleo pals out there.

See you next time.

Name: _____ Date: _____

1. What kind of dinosaur is Proto Andy a fossil of?

2. Scientists use most fossils for research. What is one thing scientists have learned or deduced about Protoceratops dinosaurs from the dinosaur's fossils?

3. What is a main idea of this text?

Appendix I

Fossils: Text-Evidence Inquiry Chart (i-chart)

Directions: Fill in each box with evidence from each text or with your own words.

	How are fossils formed?	What types of things can fossils tell us about the past?	What types of animals have been found as a part of fossil exploration?
Background Knowledge/My Prediction			
Source 1: "Uncovering Clues to the Past"			
Source 2: "Face to Fossil"			
Summary (In my own words)			

Appendix J

Name: _____ Date: _____ #: __

Write an informational article for your school's science magazine about fossils, including how they are formed, what types have been found, and what they tell us about the past.

Be sure to: Use the three headings from the IChart as the three subheadings of your article. You should include evidence from both texts that we have read in class as part of your article.

Text Complexity Analysis of *Rocks and the Rock Cycle & Uncovering Clues to the Past*

Text Description

Briefly describe the text: These two chapters of science text describe the formation of and types of rocks and explain the origins of fossils.

Qualitative Measures

Meaning/Purpose: *(Briefly explain the levels of meaning (Literary Text) or purpose (Informational text.)*
This text's purpose is to explain the nature of rocks and the origin of fossils.

Text Structure: *(Briefly describe the structure, organization, and other features of the text.)*
The text is structured with short paragraphs with inset definitions and illustrations to further explain the concepts introduced in the text. It also includes on alternate pages a box with key ideas presented in one sentence.

Language Features: *(Briefly describe the conventions and clarity of the language used in the text, including the complexity of the vocabulary and sentence structures.)*
The text includes scientific terms that are defined. The sentences are either simple or complex; many include clauses beginning with "that."

Knowledge Demands: *(Briefly describe the knowledge demands the text requires of students.)*
The text requires that students remember new vocabulary from one section of text to the next.

Quantitative Measure

Complexity Band Level (provide range):
Grade band: 4-5

Lexile or Other Quantitative Measure of the Text:
Lexile Measure of 850L

Considerations for Reader and Task

Below are factors to consider with respect to the reader and task (See attached guiding questions to assist each teacher in filling out this section for his or her own class):

Potential Challenges this Text Poses:
While the text is in the appropriate grade band, it is a standard textbook passage and includes a great deal of science content vocabulary.

Major Instructional Areas of Focus (3-4 CCS Standards) for this Text:
RI4.3
RI4.9

Differentiation/Supports for Students:
The text includes multiple images and illustrations to support student understanding. It also includes definitions of key terms, and a box on alternate pages that identifies key ideas on the preceding pages. Students will also have watched a video on this topic prior to reading the text, and will have guiding questions to help them understand key points as they read.

Recommended Placement

Briefly explain the recommended placement of the text in a particular grade band.
Both the Lexile level and qualitative indicators, especially the use of frequent in-text supports, appropriately place this text at the 4th grade level.

Text Complexity Analysis of *Face to Fossil*

Text Description

Briefly describe the text: This text is an interview between a host and a dinosaur fossil about where he came from and what we can learn from him.

Qualitative Measures

Meaning/Purpose: *(Briefly explain the levels of meaning (Literary Text) or purpose (Informational text.)*
This text's purpose is to provide information about where fossils come from, how they are found and preserved, and what they can tell us.

Text Structure: *(Briefly describe the structure, organization, and other features of the text.)*
The text is structured as an interview between a host and an assembled dinosaur fossil, Proto Andy. It includes headings that introduce each section with a question that will be addressed in that section, along with multiple pictures per page to support the information presented.

Language Features: *(Briefly describe the conventions and clarity of the language used in the text, including the complexity of the vocabulary and sentence structures.)*
The language is casual, and mostly a series of questions and answers. At times, it uses humorous language that adults would catch, but that might confuse students, such as calling the dinosaur a "Gobi Sandwich" or making jokes about being 80 million but only feeling 10 million – it's all in your attitude. There are also words included that mean one thing in context but another in casual English, such as "jacket".

Knowledge Demands: *(Briefly describe the knowledge demands the text requires of students.)*
The text requires that students read both literally for information and figuratively to determine when the speakers are joking with each other. They also need some background knowledge on fossils and rocks to fully understand the text.

Quantitative Measure

Complexity Band Level (provide range):
Grade band: 4-5

Lexile or Other Quantitative Measure of the Text:
Lexile Measure of 610L

Considerations for Reader and Task

Below are factors to consider with respect to the reader and task (See attached guiding questions to assist each teacher in filling out this section for his or her own class):

Potential Challenges this Text Poses:
This text includes several difficult dinosaur names, along with technical language about dinosaurs. Students who read literally may be confused by the embedded repartee between interviewer and interviewee.

Major Instructional Areas of Focus (3-4 CCS Standards) for this Text:
RI4.9
W4.2
W4.7

Differentiation/Supports for Students:
The text includes multiple images and illustrations to support student understanding. It also contains headings with questions to guide students' thinking as they read each section.

Recommended Placement

Briefly explain the recommended placement of the text in a particular grade band.
While the Lexile of 610 places this text in the 2-3 band, the knowledge and language demands make it a more complex text better suited to placement in 4th grade.