

Lead-In Materials Overview: Hammurabi’s Code

This guide provides you with the information you need to effectively prepare students for the performance task that will be administered during Sessions 3 and 4. The performance task requires students to write several paragraphs in response to two prompts that require they introduce a historical topic and then make evidentiary claims about that topic. Before students do this independent writing activity, they will participate in some scaffolding and instructional activities. These include reading and analyzing several prepared and excerpted primary source documents. This lesson is necessary to ensure that all students have an equal opportunity to perform their best on the tasks. Please read this carefully and follow the instructions with fidelity. Please use the Task Administration Guidance booklet to guide you in administering the task during sessions 3 and 4.

| Overall Assessment Structure | |
|--|--|
| Session 1: • Introduction – Required Lead-In activities | 1. Engage students 2. Introduce the task 3. Introduce vocabulary 4. Analyze a visual primary source together 5. Discuss accompanying text |
| Session 2: • Required Lead-in activities | 1. Review and set context 2. Analyze a written primary source <ul style="list-style-type: none"> a. Introduce document b. Model analysis c. Pair or group work 3. Share out and feedback |
| Session 3: • Administer Task | 1. Administer task 2. Collect materials |
| Session 4: • Administer Task | 1. Administer task 2. Collect and log materials |
| Session Timing | Please note that each session is meant to last a class period; approximately 45 minutes. If you have block scheduling or a different class schedule, please use the timing recommendations to adjust implementation accordingly. |

When implementing the performance tasks with English Language Learners (ELLs) and Students with Disabilities (SWD), teachers should consider the following instructional supports.

Vocabulary Building

- ELLs:
- Provide student-friendly definitions, examples, synonyms, antonyms, multiple meanings, roots, affixes, pictures, diagrams, and realia prior to reading.
 - Advise ELLs when words are cognates as cognate recognition is not always automatic when students are not proficient in both languages.

Teacher Materials: Lead-in Materials Guidance, Sessions 1 and 2

Grade 6 Social Studies: Hammurabi's Code

- Teach academic language and create purposeful opportunities for students to practice using the words and phrases.

SWDs:

- Provide student-friendly definitions, examples, synonyms, antonyms, multiple meanings, roots, affixes, pictures, diagrams, and regalia prior to reading.
- Provide visual representations prior to teaching and reading of content area material.
- Explicitly teach word origins, roots, prefixes, and suffixes.
- Teach academic language and create purposeful opportunities for students to practice using the words and phrases.

Reading Comprehension

ELLs:

- Elicit prior knowledge and build background knowledge to access content in reading.
- Have students complete graphic organizers constructed with prompts that guide them to paraphrase what they are reading and cite supporting evidence.
- Construct prompts so that students are able to make the connection between what they are reading and how the content can be used in developing their writing response(s).

SWDs:

- Utilize various ways of students being able to hear text as they read it including software and other technology-based options that are available for text-to-speech purposes.
- Elicit prior knowledge and build background knowledge to access content in reading.
- Have students complete graphic organizers constructed with prompts that guide them to paraphrase what they are reading and cite supporting evidence.
- Construct prompts so that students are able to make the connection between what they are reading and how the content can be used in developing their writing response(s).

Writing

ELLs:

- Provide writing frames and sentence starters.
- Explicitly teach the academic language associated with the writing genre being taught.
- Note that cultural differences in writing discourse may influence ELLs' approaches to writing in English. For example, the order of ideas and arguments within an argument essay in English may be significantly different than that which is in the ELLs' native languages. This can be taken into account when scaffolding writing instruction and providing feedback to student writing.

SWDs:

- Present alternate ways of communicating ideas other than traditional writing which can include dictating, using speech-to-text software, and allowing a student with grapho-motor, fine motor, and/or visual perception challenges to use a computer instead of writing the essay by hand.
- Explicitly teach how to use information from a graphic organizer to create an essay.
- Provide writing frames and sentence starters.
- Explicitly teach the academic language associated with the writing genre being taught.

Native Language Support for ELLs: The strategic use of the native language can be incorporated into English instruction as a support structure to clarify, build prior knowledge, extend comprehension, and bridge prior learning and experiences. This can be integrated into a teacher's instructional practice through the following: technology, human resources (e.g., paraprofessionals, peers, and parents), native language materials, and flexible grouping.

Teacher Manual: Guidance for Session 1 Lead-In Materials

| | |
|-------------------|--|
| Session 1 | Lead-In Materials Guidance Booklet + Accompanying PowerPoint |
| Purpose | The purpose of this first session to: <ul style="list-style-type: none"> • Create a level playing field with respect to understanding the concept of historical understanding. • Introduce the concept of “primary sources” and other key vocabulary words and concepts. |
| Materials | Provided texts (student lead-in packet: Session 1). Provided graphic organizer (student lead-in packet: Session 1). PowerPoint Presentation or handouts in student packet. SmartBoard or chart paper. |
| Total Time | 45 minutes |

(15 min.) **Activity 1:** Introduce Students to Task and Key Vocabulary

- 1) *5 minutes:* Ask students the following questions and elicit responses (use PowerPoint slide #2)
 - a. What object would you use to show your great-grandchildren how you lived in 2011?
 - b. What does that object show about your life? About features of your community?

- 2) *5 minutes:* Introduce the key characteristics of the task to students. You may use the following script:
 - a. Your chosen objects are what historians call “primary sources.” A primary source is any object or document from the time under study. So, if a historian in the year 2050 wanted to find out about New York City sixth-graders’ lives in 2011, he or she could study the objects you mention.

We are studying the Ancient World and we are going to do a task where you will be looking at primary sources from that ancient world to uncover more about life during that time. We will use what people who lived in that world left behind to learn more about the specific ways they provided for their basic needs like food and shelter, and how their societies and communities worked.

- 3) *5 minutes:* Introduce four main vocabulary words to students (use powerpoint slide #3)
 - a. A primary source is any object or document from the time under study
 - b. Primary sources can be artifacts or documents
 - c. Artifacts are objects made by people from the past
 - d. Documents are written texts
 - e. Archaeologists are people who study the past by recovering and studying artifacts or objects from the past. They go on “digs” where they carefully try to recover objects and settlements that have been buried over time

(15 min.) **Activity 2:** Analyze a visual primary source, an artifact, together

- 1) On your smart board (or LCD projector), project the image from the top of the monument holding Hammurabi’s Code of Laws (ppt. slide #4)
 - a. Ask students to look closely at the image and answer the question, “What do you see?”
 - b. Students should note the black color, the two figures, the differences in their clothing, head wear, posture, outstretched arms, the chair, and that the seated figure is holding something
- 2) Make hypotheses. Ask students:
 - a. What do you think is happening here?
 - b. Who is in this picture?
 - c. What are they doing?
- 3) As students answer, ask them to support their ideas with specific evidence from the object. Ask students:
 - a. What in the image makes you think that?
 - b. What is your evidence for that idea (or claim)?
 - c. NOTE: Look for opportunities to point out the difference between what students see and what they think it means. For example, if a student says she or he “sees” a ruler and a subject, ask: “What specifically do you see in the image that makes you think that?”
- 4) Reveal information:
 - a. Tell students that they are looking at a stone monument found in 1901 that was created during ancient times. This was the image at the top of that stone monument and underneath that image was writing. That writing is actually an artifact known as Hammurabi’s Code of Laws.

(15 min.) **Activity 3:** Use textual information with visual information.

- 1) Pass out *Handout 1 (Documents A & B)*.
- 2) Read Document B (“Prelude”) together.
- 3) Discuss: Does Document B help us know what is happening in this picture? If so, how?
- 4) Reveal Information:
 - a. *Possible script:* Historians believe that the picture shows a seated god and King Hammurabi. The god is giving something to Hammurabi that will help him do the things in the text, such as “destroy the wicked.” That is the Code of Laws.
- 5) Continue analysis:
 - a. Ask: What does this document, when combined with the visual, tell us about Hammurabi and his society?
 - b. Possible answers: They had religious beliefs, Hammurabi believed that the gods gave him the right to rule, rulers had responsibilities to communities, they had a sense of right and wrong, they had laws, and the laws were connected to religion.

Close: Collect all materials to redistribute tomorrow. Tell students, “Tomorrow, we will continue to learn more about this primary source, and this artifact is known as Hammurabi’s Code of Laws. “

Handout 1

Document A: Image

Below is the image that was found at the top of the artifact containing Hammurabi's Code of Laws.



Document B: Prelude (Modified)

Below is a selection from the prelude or introduction to Hammurabi's Code. This prelude appeared on the stone monument underneath the image as an introduction to the laws.

The gods Anu and Bel called by name me, Hammurabi, the noble prince, to bring about the rule of justice in the land, to destroy the wicked and the evil-doers; so that the strong should not harm the weak; so that I should rule over the people and enlighten the land, and further the well-being of mankind.

Source: Selection from Hammurabi's Code, created in approximately 1750 B.C.E in the city-state of Babylon in Mesopotamia.

Teacher Manual: Guidance for **Session 2** Lead-In Materials

| Session 2 | Task Administration Guidance Booklet |
|------------------|--|
| Purpose | The purpose of Session 2 is to: -Set the historical context for Hammurabi’s Code and work with students to analyze a written primary source |
| Materials | PowerPoint presentation Smartboard Paper and pencils Student materials booklet |
| Total Time | 45 minutes |

(15 min.) **Activity 1:** Review

- 1) (3 minutes) Remind students that in the prior day’s lesson, they analyzed primary sources to learn more about the ancient world and that they started looking closely at Hammurabi’s Code. Now, in order to fully analyze the document, they need to identify the specifics about where and when this topic and source fits in the Ancient World. They need to answer the following questions:
 - a. When was Hammurabi’s Code produced?
 - b. Where was Hammurabi’s Code produced?

- 2) (12 minutes) Set the historical context.
 - a. Ask everyone to look at their timeline (*Handout 2, Document C*). Read through it with students to answer the “when” question.
 - i. *Note:* This is also an opportunity to remind students of the Neolithic Revolution, the growth of river valley civilizations, and the emergence of writing for record-keeping. These changes will help students better understand the significance of Hammurabi’s Code and how it is representative of some important changes in how humans lived and interacted.
 - b. Show PowerPoint slide #7 with map
 - i. Help students identify the part of the world it represents.
 - ii. Help students find the Tigris and Euphrates River, Mesopotamia and Babylon.
 - c. Make the point that historians and archaeologists always ask two questions about any artifact or document (powerpoint slide #8):
 - i. Where was it made or written?
 - ii. When was it made or written?

(20 min) **Activity 2:** Analyze a written primary source.

- d. (5 minutes) Tell students that now that they know where Hammurabi's Code came from and when, they are going to use the document to learn more about Babylon in Mesopotamia around 1750 B.C.E.
 - i. Give students *Handout 3 (Document D)* and identify the parts of the document.
 1. Show title at the top.
 2. Show "source" information at the bottom that says where and when the document came from.
 3. Show bolded vocabulary and definitions at the bottom.
 4. Show and read "note" that gives students additional information about the text.
 - ii. Our question for this document is, "What does it tell us about life in Mesopotamia? (powerpoint slide #9)
 - iii. Model Analysis: Hand out Text Analysis Worksheet (*Handout 4*).
 1. Use Law #3 to model analysis (Use example on handout. The text of the law for model is on PowerPoint slide #10).
- e. (15 minutes) Law Analysis Activity:
 - i. Assign 1/3 of the class to work on Document D, and then hand out Document E to 1/3 of the class and Document F to 1/3 of the class. **Note:** Documents E and F are Handouts 5 and 6, respectively.
 - ii. Pairs of students should work together to fill out their worksheets.

(10 min) **Activity 3:** Share out.

- 1) Provide all of the documents to all students.
- 2) Randomly select pairs to share their analysis of one law.
 - a. Have them read the law aloud and then share their analysis. When appropriate, ask students to point to specific phrases or information to support their ideas about Mesopotamian life. If incorrect information is shared, ask for input from another pair who read the same law or correct it.

Close: Collect all materials to redistribute tomorrow. Tell students, "Tomorrow, you will be writing paragraphs about Hammurabi's Code."

Handout 2

Document C: Timeline

The events on this page are written starting with the oldest and ending with the most recent. Refer to the “Vocabulary Terms” box for any unfamiliar words.

| Year(s) | Event |
|-------------------|--|
| c. 8000 BCE | Grain is grown in Mesopotamia. This is evidence of people starting to settle and farm rather than hunt and gather. |
| c. 4300-3100 BCE | Cities form in Mesopotamia. |
| c. 3400 BCE | Egyptians develop a form of writing called hieroglyphs. |
| c. 3000 BCE | Civilization of Sumer in Mesopotamia emerges. |
| c. 2400 BCE | Sumerians develop a form of writing called “cuneiform.” |
| c. 3000 BCE | Babylonians use advanced math. |
| c. 2000 BCE | Trade networks develop. |
| c. 1792- 1750 BCE | Hammurabi is king of Babylon and conquers much of Mesopotamia. He creates Hammurabi’s Code. |
| 1901 CE | Hammurabi’s Code is discovered. |

Vocabulary Terms

BCE: Before the Common Era, before year 1.

CE: Common Era, the years after year 1. We live in the Common Era.

c.: Circa (Around or Approximately).

Mesopotamia: a Greek word that means “between the rivers. The Tigris and Euphrates Rivers are the boundaries of this civilization.

Babylon: an ancient city in Mesopotamia on the Euphrates River.

Babylonians: people who lived in Babylon.

Handout 3

Document D: Hammurabi’s Code (Modified)

Note: In 1901, **archaeologists**¹ found a black stone monument. On it was Hammurabi’s Code, an ancient set of laws. Hammurabi was a King of Babylon in Ancient Mesopotamia. His code was not the first set of laws, but it is one of the earliest and most complete available to us today. Archeologists have since found parts of the Code also on clay tablets.

The Code had 282 laws. Below are some of those laws.

CODE OF LAWS

3. If anyone accuses another of any crime that is punishable by death, and does not prove what he has charged, he shall be put to death.
8. If anyone steals cattle or sheep or a pig or a goat, if it belongs to a god or to the court, the thief shall pay **thirtyfold**²; if they belonged to a freed man of the king he shall pay **tenfold**³; if the thief has nothing with which to pay he shall be put to death.
15. If any one takes a male or female slave outside the city gates, he shall be put to death.
21. If anyone breaks a hole into a house [break in to steal], he shall be put to death before that hole and be buried.
-

Source: Selection from Hammurabi’s Code, created in approximately 1750 B.C.E in the city-state of Babylon in Mesopotamia.

¹ Archaeologist: someone who studies the past by recovering and studying objects like tools, pottery, and graves.

² Thirtyfold: Thirty times the amount something is worth.

³ Tenfold: ten times the amount something is worth.

Handout 4

TEXT ANALYSIS WORKSHEET (2 pages)

Name _____

Directions

1. Write down the law number in the first column.
2. Restate the law in your own words in the second column.
3. Based on what the law means, what do you think life was like in ancient Mesopotamia? Write your answer in the third column.
4. Repeat steps #2-4 until you have examined at least **three** different laws.



Hammurabi's Code Analysis

| Law Number | Restate the law in your own words | What might the law tell you about life in ancient Mesopotamia? |
|------------|--|--|
| 3 | <i>You can be killed for an untrue accusation.</i> | <i>Some legal system or courts existed. This is an example of harsh or cruel punishment.</i> |
| | | |

| Law Number | Restate the law in your own words | What might the law tell you about life in ancient Mesopotamia? |
|-------------------|--|---|
| | | |
| | | |
| | | |

Handout 5

Document E: Hammurabi's Code (Modified)

Below are some of the laws from Hammurabi's code.

104. If a merchant gives an agent corn, wool, oil, or any other goods to transport, the agent shall give a **receipt**⁴ for the amount, and pay the merchant. Then he shall obtain a receipt from the merchant for the money that he gives the merchant.

117. If any one fails to pay his debt, and sells himself, his wife, his son, and daughter for money or gives them away to slavery: they shall work for three years in the house of the man who bought them, and in the fourth year they shall be set free.

132. If the "finger is pointed" at a man's wife about another man, but she is not caught sleeping with the other man, she shall jump into the river for her husband.

133. If a man is taken prisoner in war, and there is food in his house, but his wife leaves that house and goes to another house: because this wife did not keep her court, and went to another house, she shall be thrown into the water.

134. If anyone is captured in war and there is not food in his house, if his wife go to another house this woman shall not be blamed.

Source: Selection from Hammurabi's Code, created in approximately 1750 B.C.E in the city-state of Babylon in Mesopotamia.

⁴ Receipt: a note, a proof of payment

Handout 6

Document F: Hammurabi's Code (Modified)

Below are some of the laws from Hammurabi's code.

195. If a son strikes his father, his hands shall be cut off.

196. If a man put out the eye of another man, his eye shall be put out.

202. If any one strikes the body of a man higher in rank than he, he shall receive sixty blows with an ox-whip in public.

203. If a free-born man strikes the body of another free-born man or equal rank, he shall pay one gold **mina**⁵.

204. If a freed man strikes the body of another freed man, he shall pay ten **shekels**⁶ in money.

205. If the slave of a freed man strikes the body of a freed man, his ear shall be cut off.

274. If any one hires a skilled **artisan**⁷, he shall pay as wages five **gerahs**⁸, for wages of the potter five gerahs, for a tailor five gerahs, for a ropemaker four gerahs.

282. If a slave say to his master: "You are not my master," if they prove he is guilty his master shall cut off his ear.

Source: Selection from Hammurabi's Code, created in approximately 1750 B.C.E in the city-state of Babylon in Mesopotamia.

⁵ Mina: a very large unit of money. It is worth much more than a shekel.

⁶ Shekels: a unit of money, like a dollar. It is worth much more a gerah.

⁷ Artisan: a skilled workman, craftsman

⁸ Gerahs: a small unit of money, like a cent. It is worth much less than a shekel.

Teacher Materials: Lead-in Materials Guidance, Sessions 1 and 2
Grade 6 Social Studies: Hammurabi’s Code

CREDITS

Hammurabi’s Code: From <http://avalon.law.yale.edu/ancient/hamframe.asp>, Translated by L.W. King

Please use the Task Administration Guide for Sessions 3 and 4

| | |
|---------------------------------|--|
| Session 3: • Administer Task | 3. Administer task 4. Collect materials |
| Session 4: • Administer Task | 3. Administer task 4. Collect and log materials |

Teacher Materials: Lead-in Materials Guidance, Sessions 1 and 2
 Grade 6 Social Studies: Hammurabi’s Code

| Dimension | 1 Basic | 2 | 3 Developing | 4 | 5 Proficient | 6 | 7 Advanced |
|---|--|---|---|---|---|---|--|
| ARGUMENT <i>What is the evidence that the student can make a historical argument?</i> | <ul style="list-style-type: none"> Claims are unclear or irrelevant. Reasons are unrelated to claim or absent. | | <ul style="list-style-type: none"> Claim(s) are clearly stated. Paragraphs present claims and related reason or evidence. | | <ul style="list-style-type: none"> Clear claims answer the prompt. A paragraph clearly presents related and accurate claim, reasons, and evidence. | | <ul style="list-style-type: none"> Clear and specific claims answer the prompt. Paragraphs clearly and accurately present related claims, reasons, and evidence. |
| USING EVIDENCE A <i>What is the evidence that the student can use historical sources?</i> | <ul style="list-style-type: none"> Documents are not used. Evidence (quotes and information from documents) is absent. | | <ul style="list-style-type: none"> Documents are rarely used. Evidence (information or quotes from documents) is included. | | <ul style="list-style-type: none"> Documents are accurately used in a major part of the argument. Claim(s) are supported by accurate evidence, including information and quotations. | | <ul style="list-style-type: none"> Documents are accurately used throughout the argument. Claims are supported by an explanation of evidence, including quotations and information. |
| USING EVIDENCE B <i>What is the evidence that the student can integrate historical sources?</i> | <ul style="list-style-type: none"> Relevant information is not included. All information comes from a single document. | | <ul style="list-style-type: none"> Relevant information is included but not obviously connected to other information. Visual and written information is included. | | <ul style="list-style-type: none"> Accurately connects different specific information by grouping similar evidence together in paragraph(s). Accurately connects information from visual and written sources. | | <ul style="list-style-type: none"> Accurately connects different specific information by explicitly comparing sources. Clearly and accurately connects information from visual and written sources to support claim. |

Teacher Materials: Lead-in Materials Guidance, Sessions 1 and 2
 Grade 6 Social Studies: Hammurabi’s Code

| Dimension | 1 Basic | 2 | 3 Developing | 4 | 5 Proficient | 6 | 7 Advanced |
|--|--|---|--|---|---|---|--|
| HISTORICAL CONTENT A <i>What is the evidence that a student can use specific historical knowledge to introduce a historical topic?</i> | <ul style="list-style-type: none"> Summary of source is inaccurate or absent. Origins of sources are ignored. | | <ul style="list-style-type: none"> Summary and description of source contains significant errors or is unclear. Includes general information about when or where a source was created. | | <ul style="list-style-type: none"> Summary and description of source is accurate and clear. Accurately identifies when and where a source was created. | | <ul style="list-style-type: none"> Summary and description of source is detailed, accurate and clear. Uses when and where a source was created to draw connections to other sources, topics, or societies. |
| HISTORICAL CONTENT B <i>What is the evidence that a student can use specific historical knowledge to craft a reasonable argument?</i> | <ul style="list-style-type: none"> Content related to the topic is not included. Claim(s) about Mesopotamian life are absent or inaccurate. | | <ul style="list-style-type: none"> Includes content generally related to the topic. Claim(s) identify one or two characteristics of Mesopotamian life | | <ul style="list-style-type: none"> Includes accurate, detailed content to help the reader understand the claim(s). Argument describes multiple characteristics of Mesopotamian life. | | <ul style="list-style-type: none"> Includes accurate, extensive content to help the reader understand the claims. Argument describes and explains multiple characteristics of multi- of Mesopotamian civilization. |
| WRITING ORGANIZATION AND CLARITY <i>What is the evidence that a student can write clearly about an historical topic?</i> | <ul style="list-style-type: none"> Paragraphs lack focus and are hard to follow. No transitions are used. Concluding statement is absent. | | <ul style="list-style-type: none"> Paragraphs are loosely organized to present claim(s). Transitional words or phrases connect <i>some</i> parts of the argument. Concluding statement is a restatement of the prompt or claim. | | <ul style="list-style-type: none"> Each paragraph is focused on one central idea and is cohesive. Transitional words or phrases connect parts of the argument. Concluding statement follows from or supports the argument. | | <ul style="list-style-type: none"> Sequence of focused, cohesive paragraphs supports a clear and coherent argument. Transitional words and phrases guide the reader through the development and reasoning of the argument. Concluding statements follow from or support the argument. |

Middle School

Science and Technology in Society

Where Has All the Ice Gone?



**Curriculum-embedded Science Performance Task
For 7th Grade Science Students**

Lead-In Materials Overview

This guide provides you with the information you need in order to prepare students for the Grade 7 Science, Technology and Society (STS) performance assessment. The STS Expository Essay task was developed to address current science education standards that encourage teachers to teach students how to use the Internet to locate reliable information, how to collect and evaluate evidence and how to write concisely and objectively about science-related issues. Some of the relevant standards are described below. Please also review Appendices A-C for additional important information you may use with this task and for exploration in your classroom beyond the performance task.

The lead-in activities are necessary to ensure that all students have an equal opportunity to perform their best on the tasks. Please read this carefully and follow the instructions with fidelity.

| Overall Assessment Structure | |
|-------------------------------------|---|
| Session 1: | Introduction |
| Session 2: | Internet Research * |
| Session 3: | Reading and Interpreting Graphs |
| Session 4: | Assessment of Writing |
| Session Timing | Please note that sessions are meant to last a class period; approximately 45 minutes. If you have block scheduling or a different class schedule, please use the timing recommendations to adjust implementation accordingly. |

*If there is a computer lab at your school please make a reservation the space for students to conduct their internet research.

When implementing the performance tasks with English Language Learners (ELLs) and Students with Disabilities (SWD), teachers should consider the following instructional supports.

Vocabulary Building

ELLs:

- Provide student-friendly definitions, examples, synonyms, antonyms, multiple meanings, roots, affixes, pictures, diagrams, and translations prior to reading.
- Advise ELLs when words are cognates as cognate recognition is not always automatic when students are not proficient in both languages.
- Teach academic language and create purposeful opportunities for students to practice using the words and phrases.

SWDs:

- Provide student-friendly definitions, examples, synonyms, antonyms, multiple meanings, roots, affixes, pictures, diagrams, and realia prior to reading.

Teacher Manual: Task Administration Guide Sessions 1, 2, and 3
Science Grade 7: Where Has All the Ice Gone?

- Provide visual representations prior to teaching and reading of content area material.
- Explicitly teach word origins, roots, prefixes, and suffixes.
- Teach academic language and create purposeful opportunities for students to practice using the words and phrases.

Reading Comprehension

ELLs:

- Elicit prior knowledge and build background knowledge to access content in reading.
- Have students complete graphic organizers constructed with prompts that guide them to paraphrase what they are reading and cite supporting evidence.
- Construct prompts so that students are able to make the connection between what they are reading and how the content can be used in developing their writing response(s).

SWDs:

- Utilize various ways of students being able to hear text as they read it including software and other technology-based options that are available for text-to-speech purposes.
- Elicit prior knowledge and build background knowledge to access content in reading.
- Have students complete graphic organizers constructed with prompts that guide them to paraphrase what they are reading and cite supporting evidence.
- Construct prompts so that students are able to make the connection between what they are reading and how the content can be used in developing their writing response(s).

Writing

ELLs:

- Provide writing frames and sentence starters.
- Explicitly teach the academic language associated with the writing genre being taught.
- Note that cultural differences in writing discourse may influence ELLs' approaches to writing in English. For example, the order of ideas and arguments within an argument essay in English may be significantly different than that which is in the ELLs' native languages. This can be taken into account when scaffolding writing instruction and providing feedback to student writing.

SWDs:

- Present alternate ways of communicating ideas other than traditional writing which can include dictating, using speech-to-text software, and allowing a student with grapho-motor, fine motor, and/or visual perception challenges to use a computer instead of writing the essay by hand.
- Explicitly teach how to use information from a graphic organizer to create an essay.
- Provide writing frames and sentence starters.
- Explicitly teach the academic language associated with the writing genre being taught.

Native Language Support for ELLs: The strategic use of the native language can be incorporated into English instruction as a support structure to clarify, build prior knowledge, extend comprehension, and bridge prior learning and experiences. This can be integrated into a

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teacher’s instructional practice through the following: technology, human resources (e.g., paraprofessionals, peers, and parents), native language materials, and flexible grouping.

Teacher Manual: Guidance for **Session1** Lead-In Materials

| | |
|------------------|--|
| Session 1 | Lead-In Materials Guidance Booklet |
| Purpose | The purpose of this first session is to: <ul style="list-style-type: none"> • Create a level playing field with respect to reading scientific information. • Provide students with “the big picture” of the task activities • Introduce the concept of “global warming” and other key vocabulary words and concepts |
| Materials | Provided texts (student lead-in packet: Session 1) Provided Data Table (student lead-in packet: Session 1) Access to computer(s) for additional research Map including Greenland Smart Board or Chart Paper |
| Total Time | 45 minutes, 45 minutes |

(45 min.) **Session 1:** Introduce Students to Task and Key Vocabulary

- 1) *15 minutes:* Ask students the following questions and elicit responses
 - a. What do you know about global warming?
 - b. How do you think it is affecting the world?

- 2) *15 minutes:* Introduce the key characteristics of the task to students. You could say:
 - a. Science isn’t just about doing experiments; often scientists perform research to learn more about phenomena in order to find solutions to problems. Scientists look for ways in which science, technology and society intersect. One problem facing the world that scientists are interested in is global warming.
 - b. Preview the first article: New Melt Record for Greenland’s Ice Sheet

- 3) *15 minutes:* Introduce main vocabulary words to students
 - a. Greenland (use a map for this part of the introduction, included in these materials)
 - b. **Cryosphere:** collectively describes the portions of the Earth’s surface where water is in solid form
 - c. Glacial: denoting the presence or agency of ice, esp. in the form of glaciers
 - d. Solar radiation: radiation from the sun
 - e. Feedback loop: a circuit that feeds back some of the output to the input of a system
 - f. Bare ice: ice without snow cover

Close: Collect all materials from students to redistribute tomorrow. Tell them, “Tomorrow we will continue to research global warming.”

Teacher Manual: Guidance for **Session 2** Lead-In Materials

| | |
|------------------|--|
| Session 2 | Lead-In Materials Guidance Booklet |
| Purpose | The purpose of Session 2 is to: <ul style="list-style-type: none">• Use the internet to research issues related to global warming• Record learning in provided graphic organizers |
| Materials | Provided texts (student lead-in packet: Session 1) Provided graphic organizer (student lead-in packet: Session 1) Smart Board or Chart Paper |
| Total Time | 45 minutes |

(45 min.) **Session 2:**

- 1) *15 minutes*: Read the article “New Melt Record for Greenland Ice Sheet” and answer questions together
- 2) *15 minutes*: Have students work in small groups to complete the Note-Taking Graphic Organizer in their Student Lead-In packet
- 3) *15 minutes*: Ask students to review the graph and answer questions about the graph in their booklet

Close: Collect all materials to redistribute tomorrow. Tell students, “Tomorrow, we will continue to learn more about global warming.”

Where has all the ice gone?

Introduction

If you live in New York City, you are probably familiar with ice and snow in the winter months. During the spring – the weather gets warmer and the ice and snow melt away. But in other parts of the Earth, mainly in the Polar Regions, the ice stays frozen year around and, in fact, it has stayed that way for tens of thousands of years. These areas where the water is frozen most of the time are called the cryosphere.

The cryosphere is an important part of the Earth’s system and its temperature. White snow and ice reflect the solar energy back into space, thereby enhancing the cooling of the Earth systems. As global warming causes more snow and ice to melt each summer, the ocean and land that were underneath the ice are exposed at the Earth’s surface. Because they are darker in color, the ocean and land absorb more incoming sun’s energy, and then release the heat to the atmosphere. In this way, melting ice causes more warming so more ice melts. Some climate scientists predict that within a few decades there may be no more sea ice left in the Arctic Ocean during summer.

The melting of the Arctic ice sheets will eventually cause the raising of the sea levels, thus affecting the life of people in coastal areas. It will also affect the many living organisms that rely on parts of the cryosphere for water and habitat. For example, the polar bears roam across the Arctic sea ice as they hunt for seals. The Arctic cod find shelter in areas underneath the sea ice and some penguins in the Southern Hemisphere rely on ice during their breeding season.

New Melt Record for Greenland Ice Sheet*

Adapted from the Science Daily News at

<http://www.sciencedaily.com/releases/2011/01/110121144011.htm>

ScienceDaily (Jan. 21, 2011) — New research shows that 2010 set new records for the melting of the Greenland Ice Sheet, expected to be a major contributor to projected sea level rises in coming decades.

"This past melt season was exceptional, with melting in some areas stretching up to 50 days longer than average," said Dr. Marco Tedesco, director of the Cryospheric Processes Laboratory at The City College of New York who is leading a project studying variables that affect ice sheet melting.

The study, with different aspects sponsored by World Wildlife Fund (WWF), the National Science Foundation and NASA, examined surface temperature anomalies over the Greenland ice sheet surface, as well as estimates of surface melting from satellite data, ground observations and models.

Bare ice was exposed earlier than the average and longer than previous years, contributing to the extreme record. "Bare ice is much darker than snow and absorbs more solar radiation," said Professor Tedesco. "Other ice melting feedback loops that we are examining include the impact of lakes on the glacial surface, of dust and soot deposited over the ice sheet and how surface melt water affects the flow of the ice toward the ocean."

In an article published in *Environmental Research Letters*, Professor Tedesco and co-authors note that in 2010, summer temperatures up to 3C above the average were combined with reduced snowfall. The capital of Greenland, Nuuk, had the warmest spring and summer since records began in 1873. Bare ice was exposed earlier than the average and longer than previous years, contributing to the extreme record

* Retrieved July 31, 2011

Your task:

Read this Internet article. Look at the map and find where Greenland is located and then discuss the following questions with your group and write your best answers in your **Student Lead-In Booklet**.

1. What is the main claim of this article?
2. What evidence does the author use to support the claim?
3. What organizations supported the research?
4. Write down the scientific concepts and terms mentioned in this article that you are not yet familiar with, and use the Internet to find information about these concepts and terms.

Teacher Manual: Guidance for **Session 3** Lead-In Materials

| Session 3 | Lead-In Materials Administration Guidance Booklet |
|------------------|--|
| Purpose | The purpose of Session 3 is to: <ul style="list-style-type: none">- Continue to develop understanding of global warming- Give students scaffolded practice in reading/interpreting graphs |
| Materials | Paper and pencils Student materials booklet |
| Total Time | 45 minutes |

(45 min.) **Session 3:**

- 1) (5 *minutes*) Remind students that in the prior day's lesson, they read an article to learn more about global warming. Now, in order to fully understand this topic, they need to research more about it.
- 2) (20 *minutes*) Have students independently read and answer the questions on the article "Effects of Global Warming." When finished, they should share their answers with a small group. Have each group report out their answers to the class.
- 3) (10 min) Analyze a graph.
 - a. As a class examine the graph. Ask students what the x-axis and y-axis represent.
 - b. Discuss what they think the graph is showing them.
 - c. Help them understand the information represented in the graph.
- 4) (10 min) Share out.
 - 1) Provide all of the documents to all students.
 - 2) Randomly select pairs to share their analysis of global warming.
 - a. Have them read their notes aloud and then share their analysis. When appropriate, ask students to point to specific phrases or information to support their ideas about global warming. If incorrect information is shared, ask for input from another pair or correct it.

Close: Collect all materials to redistribute tomorrow. Tell students, "Tomorrow, you will be writing paragraphs about global warming."

Effects of Global Warming

Adapted from the National Geographic at

<http://environment.nationalgeographic.com/environment/global-warming/gw-effects/>

The planet is warming, from North Pole to South Pole, and everywhere in between. Globally, the mercury is already up more than 1 degree Fahrenheit (0.8 degree Celsius), and even more in sensitive Polar Regions. And the effects of rising temperatures aren't waiting for some far-flung future. They're happening right now. Signs are appearing all over, and some of them are surprising. The heat is not only melting glaciers and sea ice, it's also shifting precipitation patterns and setting animals on the move.

Some impacts from increasing temperatures are already happening.

- Ice is melting worldwide, especially at the Earth's poles. This includes mountain glaciers, ice sheets covering West Antarctica and Greenland, and Arctic sea ice.
- Researcher Bill Fraser has tracked the decline of the penguins on Antarctica, where their numbers have fallen from 32,000 breeding pairs to 11,000 in 30 years.
- Sea level rise became faster over the last century.
- Some butterflies, foxes, and alpine plants have moved farther north or to higher, cooler areas.
- Precipitation (rain and snowfall) has increased across the globe, on average.
- Spruce bark beetles have boomed in Alaska thanks to 20 years of warm summers. The insects have chewed up 4 million acres of spruce trees.

Your task:

Read this Internet article and discuss it with your group. Identify one of the underlined topics that interest you and conduct a research to find additional information about that topic. Your research can include written materials (e.g., newspaper and magazine articles) and/or relevant Internet sources.

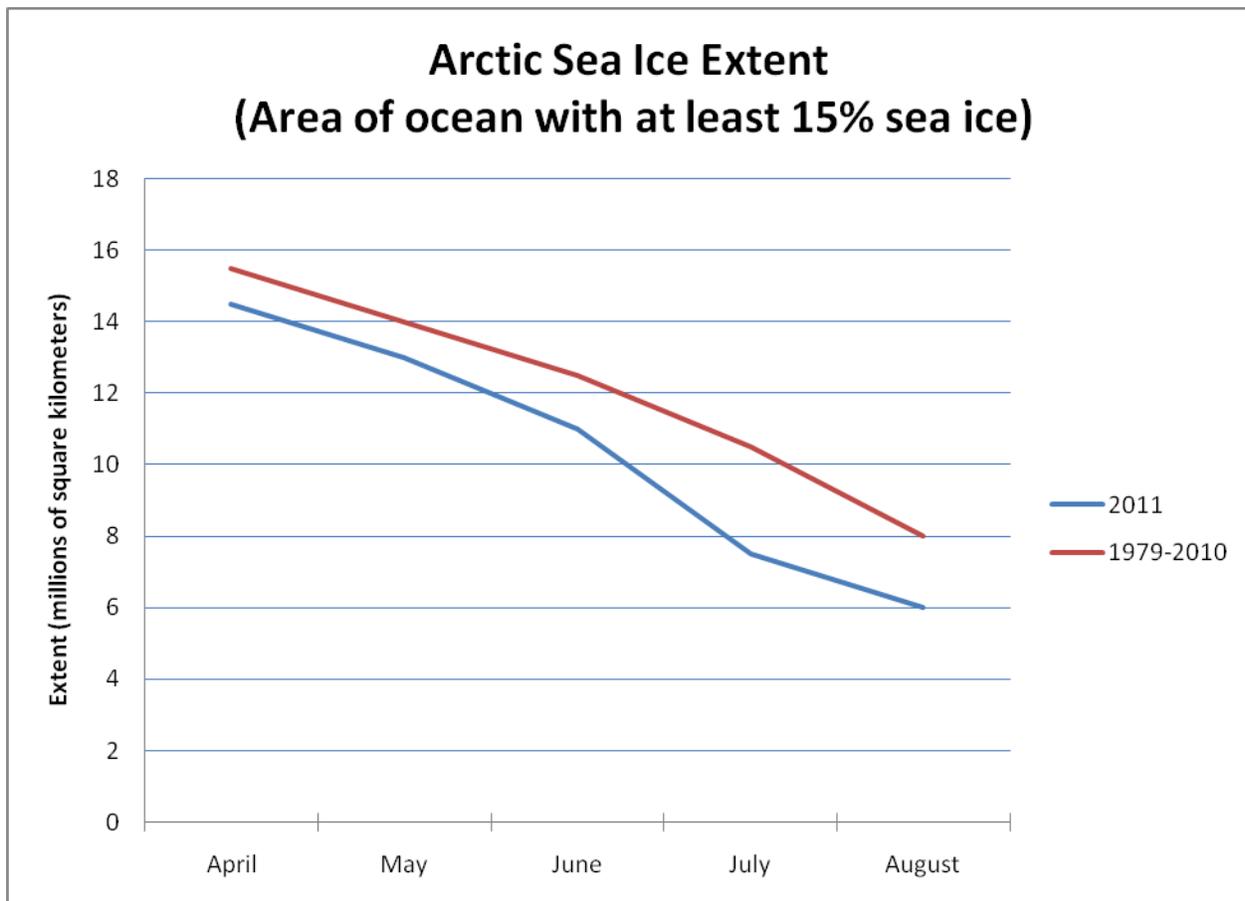
1. Present the topic of your research and write a clear statement about it.
2. Provide more details to clarify your research topic.
3. Explain how the polar ice melting may affect the phenomena you researched.
4. Cite the sources of information that you used in your research.

The information in the graph below is from:

<http://nsidc.org/arcticseaicenews/>

August 10, 2011.

Please note that the data for 1979 to 2010 represents the *average value* from 1979 to 2010.



Your task:

Observe the graph and try to make sense of it – then discuss the following questions with your group and write your best answers in your **Science Notebook**:

1. What can you learn from this graph about the general change of ice in the arctic sea during the summer months?
2. What can you learn from this graph about the changes in arctic sea ice over multiple years?
3. What might be the reasons that the measures of the ice coverage were taken only during the summer months?



Appendix A

Effective Use of the Internet for Science Teaching and Learning

The Internet is like a giant, continuously growing library that contains any information that you want. But because this library is a little disorganized, students will need guidance on how to use it. Unlike textbooks that are reviewed and edited by professionals, content on Internet pages is not always reviewed; therefore there are no guarantees that the information student find is accurate and objective. Also, some sites pay a fee so that their web pages will pop at the top of the list when you use different search engines; therefore sites on the top of the search list are not always the most relevant and important.

Before sending the students to access the Internet, provide them with a list of search engines (e.g., Google, Yahoo search, Alta Vista, Bing) and portals sites such as web links, ask.com, or, ajkids.com (these portal sites will accept questions , turn them into search terms and submit them to other search engines.) Also teach the students how to use Boolean operators (AND, OR, NOT) in order to narrow the subject of their search.

Provide students with the list of the domains that have been in operation for the past several years and are generally accepted by all. This list (organized alphabetically) will help them assess the credibility of their sources:

- **.com** - commercial business site
- **.edu** - educational site (usually a university or college)
- **.gov** - U.S. governmental/non-military site
- **.mil** - U.S. military sites and agencies
- **.net** - networks, Internet service providers, organizations
- **.org** - U.S. non-profit organizations and others

As a rule of thumb, you can generally rely on the GOV and EDU hostnames to present accurate information. The NET, ORG, MIL, and COM domains are more likely to host pages with their own personal or organizational agendas and require additional verification. Students should be encouraged to research who owns these pages using either the webpage itself or <http://www.whois.net/>.

Additional Activities to extend the learning:

Online Resources:

<http://epa.gov/climatechange/> Website from the Environmental Protection Agency, has a sub-site for kids at: <http://epa.gov/climatechange/kids/index.html>

<http://environment.nationalgeographic.com/environment/global-warming/gw-overview/>
National Geographic site with information about global warming.

<http://www.sc.edu/beaufort/library/pages/bones/bones.shtml> - a great tutorial on how to search the web. The site is written for college students and may be difficult for students. But it is excellent site for teachers who want to guide their students in the use of the Internet.

<http://sites.google.com/site/medialiteracyworkshop/day-one> - information on media literacy in Science, created by KQED (a PBS affiliate).

Appendix B: The STS Research and Expository Essay Tasks

In STS Expository Essay tasks students will explore issues related to the impact of science and technology on society and the environment. Students will search the Internet for relevant and credible scientific data. Based on the data they collect, they will make claims and support them with evidence. A culminating activity of this project will be the writing of a short three-paragraph expository essay.

How to write an expository essay

Expository (the root is “expose”) essay is an objective writing in which the writer explains and informs the readers about a specific topic, without offering a personal opinion or developing a specific position on the issue. The goal of an expository essay is to provide the reader with a full understanding of a complex process or situation. The expository paper should include concise, clear and objective descriptions of facts and evidence that are relevant to the topic of the paper.

The Expository Essay Format

Your expository essay should include three paragraphs:

Paragraph 1 – Introduction: The introduction is a statement of the essay’s thesis and the sub-topics that will be developed within the essay. The thesis needs to be well defined and narrow.

Paragraph 2 – Body: The body includes the major points that are related to the thesis, each point followed by factual information and citation of the source of the information. Make sure that there are easy to follow transition from one point to another.

Paragraph 3 – Conclusion: Conclude your expository essay by restating your thesis and summarizing the points that lead to your conclusion.

Appendix C: Analytic Scoring Instructions and Rubric

Rubric and Scoring Rationale for Lead-in Materials

The following is an explanation of the scoring procedures to be used to score student responses to this task. The explanation includes a rationale for the rubric, a description of the general scoring procedures which will be used to score the assessment, and an explanation of the intended score use.

Rubric rationale.

A rubric is a scoring tool used to judge the quality of a piece of work or performance on a task. The rubric for this task is an *analytic rubric* which includes several aspects of performance on which student responses will be scored. The total score for the performance task will be the sum of the scores across all aspects of performance.

In order for scorers to determine what performance level or score a response should be assigned for a given aspect of performance, detailed and objective scoring criteria are listed in the rubric under each aspect for each score level. The criteria describe the evidence that raters are to look for in a response so that the scoring is as objective as possible which increases the reliability of the scores.

Scoring procedures.

Student responses to this task will be scored by highly qualified and trained scorers. In general, the training of scorers begins with a discussion of the task, the knowledge, skills, and understandings being assessed, the scoring rubric, the criteria at each score level, and finally the features of a sample of pre-scored and annotated responses which represent the full range of performance. Scorers then practice scoring with additional pre-scored papers, followed by a discussion of the scores assigned to each paper to help clarify distinctions between score levels. Finally, there are a number of quality control procedures that help maintain the integrity of the scores. These include requiring scorers to meet a passing standard of reliable scoring during training before scoring papers operationally as well as monitoring scoring accuracy during the operational scoring session.

Baseline Measures.

Student performance on this assessment is intended to serve as a baseline for measuring student learning of select knowledge, skills, and understandings over the school year. The scores on this pre-assessment combined with other information will aid in the interpretation of student performance on the post-assessment to be administered in the spring. Data from these assessments are intended to inform the selection of measures of student learning to serve as one component in a teacher evaluation system.

Teacher Manual: Task Administration Guide Sessions 1, 2, and 3
 Science Grade 7: Where Has All the Ice Gone?

Rubric for the evaluation of the 7th grade STS research paper

| Scoring Dimension | Performance levels | | | | |
|---|--|----|---|-----|--|
| | 1 | 2* | 3 | 4** | 5 |
| I. Articulating a science related claim | <ul style="list-style-type: none"> • The claim is vague or weakly connected to the issue of global warming and polar ice melting. ▪ The background science content is limited and/or includes content inaccuracies. | | <ul style="list-style-type: none"> • A claim is described and connected to the issue of global warming and polar ice melting. ▪ The background science content is accurate and relevant, but still limited. | | <ul style="list-style-type: none"> • A claim is clearly described and logically connected to the issue of global warming and polar ice melting. ▪ The background science content is clear, accurate and relevant; shows understanding of the topic. |
| II. Supporting the claim by relevant evidence | <ul style="list-style-type: none"> ▪ The main claim is weakly supported by limited or irrelevant evidence. ▪ Additional claims are not relevant or missing. | | <ul style="list-style-type: none"> ▪ The main claim is supported by relevant, but limited evidence. ▪ Additional claims are made, but not supported with evidence. | | <ul style="list-style-type: none"> ▪ The main claim is fully supported by relevant and accurate evidence ▪ Additional relevant claims are described with supporting and detailed evidence. |
| III. Citing sources used for research | <ul style="list-style-type: none"> ▪ Evidence (factual information) is based on one credible source. ▪ The sources of the factual information are missing. | | <ul style="list-style-type: none"> ▪ Evidence (factual information) is based on two credible sources. ▪ The sources of the factual information are partially cited. | | <ul style="list-style-type: none"> ▪ Evidence (factual information) is based on three or more credible sources. ▪ The sources of the factual information are appropriately cited. |
| IV. Concluding the research | <ul style="list-style-type: none"> ▪ The writer doesn't provide a relevant, evidence-based conclusion. ▪ The entire paper provides limited evidence that the student has developed the skills needed to conduct a text-based research about a science-related issue. | | <ul style="list-style-type: none"> ▪ The concluding statement is partially based on evidence-based information. ▪ The entire paper provides evidence that the student is developing the skills needed to conduct a text-based research about a science-related issue. | | <ul style="list-style-type: none"> ▪ The concluding statement follows directly from the evidenced-based information. ▪ The entire paper provides evidence that the student has developed the skills needed to conduct a text-based research about a science-related issue. |

*A score of "2" is provided when one rubric element scored as "1" and the other element in the same rubric is scored as 3.

**A score of "4" is provided when one rubric element scored as "3" and the other element in the same rubric is scored as 5.