

General Information

Lesson Parts & Duration

Total Duration: 2 to 2 ¹/₂ hours

- Segment 1: Synthesizing Text Features (photographs) (45 Minutes)
- Segment 2: Synthesize Text and Key Details, Cause & Effect, & Vocabulary (30-45 Minutes)
- Segment 3: Synthesize Text and Key Details, Cause & Effect, Vocabulary, and Summary (45 Minutes)
- Segment 4: Geometry and Science & Haiku Poem (30 Minutes)

Subject(s)

- Informational Texts: "The Mendenhall Glacier" & "Thermal Expansion" by Janna Duffy
- Synthesize Text and Key Details, Cause & Effect, Vocabulary, and Summary (RI. 4.1-4.4)

Objective

- <u>Students will</u> take literal interpretation of informational text to evaluation and synthesizing.
- <u>Students will</u> produce a "book" which includes: cause and effect, vocabulary and key details.
- <u>Students will</u> use the "book" they create to write a summary of the informational texts.
- <u>Students will</u> create a visual comparison of glaciers and ice cubes.
- <u>Students will</u> write a Haiku poem that captures the intent of "The Mendenhall Glacier."

Materials

- **Required:** copies of Informational Texts, (pages 12-13), <u>or</u> display on a document camera (optional)
- blank pieces of white paper
- lined pieces of paper
- pencil and crayons (markers or colored pencils)
- Optional: document camera or similar device to share color photos, text, and drawings with class
- **Optional:** dictionaries
- **Optional:** printable pictures (page 11) (if technology is not available, color copies of the pictures are needed)
- **Optional:** printable "Break Up Your Day" brain/movement break ideas (page 16)

Protocols (on page 15)

- Used throughout lesson be familiar with each protocol.
- Place Protocols under a document camera (if available) as necessary throughout the lesson.

Throughout these lessons, you will find:

- Scripted Text indicates things that need to be said directly. Bullets starting with a "T" followed by italicized type indicate scripted text
- Clarifiers within scripted text are in orange
- Teacher Directions indicate things you should be doing
- Side notes provide helpful hints, ELL strategies, differentiation and information
- Break Up Your Day (Brain/Movement Breaks) are in green boxes (at the end)

Remember!

Quality over quantity. All components do not have to be accomplished; lessons may be ended at any time and resumed later.



Instructional Plan: Segment 1: 45 minutes

Subject

• Synthesize Text Features (photographs)

Objective

• <u>Students will</u> take literal interpretation of informational text to evaluation and synthesizing.

Materials

- blank pieces of white paper
- pencil and crayons (markers or colored pencils)
- **Resources:** document camera or similar device to share color photos, text, and drawings with class
- **Optional:** printable pictures (page 11) (if technology is not available, color copies of the pictures are needed)

Distribute a blank piece of paper to the students.

Introduction

- **T** Today we are going to evaluate text like a scientist.
- *T* We will look for key details, causes and effects while thinking like a scientist.
- T We are going to fold our piece of paper in half creating a "Book."
- **T** Write your name and date in top right corner and number all four pages. Model this step so students can follow along with your example.

Give time for students to fold, put their name on it, and number the pages. Monitor students and provide assistance as needed.

- *T* I will be showing you three pictures for only 30 seconds.
- *T* Watch carefully.

Place pictures of glaciers (page 11) under the document camera and allow students to look at pictures for 30 seconds. After 30 seconds take the pictures away.

Book: Page 1

- ${\it T}$ What was your initial reaction, in other words what were your thoughts or questions?
- **T** Please write your reaction on the top part of page 1 of your "Book."

Put pictures back under document camera for 20 seconds.

- *T* What details in the pictures support your initial reaction?
- **T** Write the details below your reaction on page 1 of your "Book".

Give time for students to write their details. Monitor students and provide assistance as needed.

- ${\it T}$ What jumps out at you when you look at the sequence of pictures?
- T Write what jumped out at you when you looked at the sequence of pictures.

Put pictures back under document camera and leave for next protocol.

Partner discussion protocol: Students will use: <u>Back to Back and Face to Face</u> while answering the 2 questions. Then use <u>On your feet/ Get ready to meet/ Go and Greet</u> to get a new partner. With their new partner, they will again use <u>Back to Back and Face to Face</u> while answering the same 2 questions. Continue this 2 Rounds. This would be a good time to review those 2 protocols before beginning.



😽 Back to Back and Face to Face

- When in pairs, direct students to stand back to
- back
- Ask the students to consider the questionGive students at least a minute to consider their
- Give students at least a minute to consider the response
- On your feet/ Get ready to meet/ Go and Greet (should take less than one minute)
 Students stand up and put their hand up in the air
 Students find another student that has their hand up to have a "new" partner (and get them moving around)
 Once they are with their new partner, they put their hands down and face the teacher
- Back to Back and Face to Face

Partner discussion:

- 1. What was your initial reaction to the pictures? Why?
- 2. When I initially saw the photos I (thought/observed/felt)_

After 2 rounds students return to their own seats.

- *T* Let us think like a scientist.
- *T* What questions or wonderings do you have from the photos?
- *T* Write at least 2 questions or wonderings at the bottom of page 1 in your "Book".

Follow Ask, Answer, and Justify protocol for the next portion.

Ask, Answer, and Justify Put students in pairs: have them assign themselves a number 1 or 2 Roles for number assignments: 1's will ask the question first and 2's will

- Is will ask the question his respond
- Then 2's will ask the question and 1's will
- respond

Partner discussion:

Question:

What are you wondering about? Why?

Response:

As a scientist, I (questioned/wondered/thought)

Book: Page 2

- *T* On page 2 of your book you are going to write what you believe is happening to the glaciers.
- *T* In other words, in two or three sentences, what is the main idea of the photographs?
- *T* Write your answers in the bottom half of page 2.
- *T* Add illustrations to validate your answers.

🐺 Make sure to "Break Up Your Day!" 🐺

Now is a great time to take a break and get students re-energized. See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 16)

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Tell students to consider their previous conversation and revise/improve their details and "jump at me" statements.

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Instructional Plan: Segment 2: 30-45 minutes

Subject

- ELA; Informational Text: "The Mendenhall Glacier" & "Thermal Expansion"
- Synthesize Text and Key Details, Cause & Effect, & Vocabulary

Objective

- <u>Students will</u> take literal interpretation of informational text to evaluation and synthesizing.
- <u>Students will</u> produce a "book" which includes: cause and effect, vocabulary and key details.

Materials

- **Required:** copies of Informational Text, (page 12), <u>or</u> display a copy on a document camera
- "Book" students began in segment 1
- pencil and crayons (markers or colored pencils)
- **Resources:** document camera or similar device to share color photos, text, and drawings with class
- **Optional:** dictionaries
- **Optional:** printable pictures (page 11) if technology is not available, color copies of the pictures are needed

Distribute Text #1 to the students.

- *T* Please read Text #1 independently.
- *T* Circle one unfamiliar word in each paragraph.
- *T* Underline what you consider to be important details in the text.
- T Take notes in the margin of any questions or wonderings you have of the text.

Give time to complete this task. Monitor students and provide assistance as needed.



- *T* Now we are going to use <u>Back to Back and Face to Face</u> to share with a partner what you believe is the "gist of the text".
- *T* The "gist" means the main idea or essence of the text.

Book: Page 3

- *T* Now that you have had the opportunity to share ideas with a partner, it is time for you to write your own "gist".
- *T* Remember it is okay to modify your own answer after discussing with a partner.
- *T* On page 3 of your "book" please write 2-3 sentences at top of the page stating what you believe is the "gist" of "The Mendenhall Glacier".

Give time to complete this task. Monitor students and provide assistance as needed.

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<u>‴ິ On ເ</u>	Jour feet/ Get ready to meet/ Go and Greet (should take less than one minute)
•	Students stand up and put their hand up in the air
۰	Students find another student that has their hand up to have a "new" partner (and get them moving around)
٠	Once they are with their new partner, they put their hands down and face the teacher

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On your feet/ Get ready to meet/ Go and Greet (students take Text #1 and their book/pencil) then Back to Back and Face to Face protocol

Partner discussion:

Ask your partner:

"What details did you underline that support what you believe the text is about?"

Reply using sentence frame:

The details I underlined are ______because_____

- *T* Create a list of details that support your "gist" statement on page 3.
- *T* We will now use <u>On your feet/ Get ready to meet/ Go and Greet</u> to find a new partner to ask and reply to the same questions.
- *T* Remember this is a good time to add details to your "gist" list.
- *T* Make sure to take your text #1, your book, and your pencil with you when you go to find a new partner.

On your feet/ Get ready to meet/ Go and Greet (students take Text #1 and their book/pencil) then Back to Back and Face to Face protocol

Partner discussion:

- *T* We will now use <u>On your feet/ Get ready to meet/ Go and Greet</u> to find our last new partner to ask and reply to the same questions.
- *T* Remember this is a good time to add details to your "gist" list.

Give time to complete this task. Monitor students and provide assistance as needed.

- *T* Now that you have met with 3 partners and hopefully added details to your list, please return to your own seat.
- *T* Reread paragraph #1 in "The Mendenhall Glacier".
- T Underline the phrase "the Little Ice Age".
- *T* What details in paragraph #1 help you understand and "see" the Little Ice Age?
- *T* Work with a partner to find the details that support the reader's' understanding of the Little Ice Age.

Give time to complete this task. Monitor students and provide assistance as needed.

Place the pictures back under the document camera.

- *T* What details in the picture(s) help you paint a picture in your mind of what the Little Ice Age looked like 3,000 years ago?
- *T* Write at least 3 details from the pictures that help you "paint the mental picture" in your mind.

Follow the **Back to Back and Face to Face** protocol



Partner discussion:

Students ask:

"What details did you decide helped you "see" the Little Ice Age" from the pictures?"

Give time to complete this task. Monitor students and provide assistance as needed.

Add details to page 3:

T Add one new detail that your partner shared at the bottom of page 3.

Book: Page 4

T Scientists are always considering cause & effect relationships.

Create and display "Cause and Effect" organizer on document camera Sample Cause and Effect Graphic Organizer found on the right.

- *T* You are going to recreate this graphic organizer on page 4 of your book.
- T Reread "The Mendenhall Glacier" looking for a cause and an effect. Possible answer: Cause: when the glacier moves; Effect: the debris leaves horizontal gouges in the rock walls









🎩 Make sure to "Break Up Your Day!" 💭

Now is a great time to take a break and get students re-energized. See our list of engaging movement and brain break ideas to get your students moving and ready to refocus! (see page 16)

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Instructional Plan: Segment 3: 45 minutes

Subject

- ELA; Informational Text: "Thermal Expansion"
- Synthesize Text and Key Details, Cause & Effect, Vocabulary, and Summary

Objective

- <u>Students will</u> take literal interpretation of informational text to evaluation and synthesizing.
- <u>Students will</u> produce a "book" which includes: cause and effect, vocabulary and key details.
- <u>Students will</u> use the "book" they create to write a summary of the informational texts.

Materials

- Required: copies of Informational Texts (1 & 2), (pages 12-13)), or display a copy on a document camera
- "Book" students began in segment 1 & 2
- lined pieces of paper
- pencil and crayons (markers or colored pencils)
- **Resources:** document camera or similar device to share

Distribute Text #2: "Thermal Expansion"

Introduction

- *T* You are now going to read "Thermal Expansion" like a scientist and find a second cause and effect.
- *T* Please read "Thermal Expansion" independently.

Give time to complete this task. Monitor students and provide assistance as needed.

- T What is causing the icebergs to melt?
- *T* Now you will reread "Thermal Expansion" with a buddy.
- *T* I would like you to take turns and alternate sentences.

Give time to complete this task. Monitor students and provide assistance as needed.

Ask, Answer, and Justify

(students take Text #2 and their cause & effect graphic organizer/pencil)

then Give one & Get one protocol

🍀 Ask, Answer, and Justify

- Put students in pairs: have them assign
- themselves a number 1 or 2Roles for number assignments:
 - 1's will ask the question first and 2's will
 - respond
 - Then 2's will ask the question and 1's will respond

- Students share information in Ask & Justify
- Each student in the pair writes down the
- information shared by their partner
- If the information is already written, a check is put by the information
- *T* Now with your partner you are going to first <u>Ask, Answer, and Justify</u> and then <u>Give one & Get one</u>
- *T* This will help you to add more details to your graphic organizer.
- **T** Complete your Cause and Effect Graphic Organizers with your partners using "Thermal Expansion". Example: Cause: object changes temperature; Effect: the object expands or contracts

Give time to complete this task. Monitor students and provide assistance as needed.

- *T* Please return to your original seats.
- T Books need titles, illustrations, and captions for any pictures.



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Causal Reasoning Design

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permission.



T It is time to finalize your "Book" with a title, illustrations and captions to clarify your ideas.

Collect the books and annotated texts, and leave them for the teacher

Writing a Summary:

Pass out 1 piece of lined paper per student.

- T On your paper write, "I will organize key details and write a paragraph summary."
- *T* You will write 5 to 7 sentences summarizing the informational texts.
- *T* You may use your informational texts, book and Cause and Effect Graphic Organizer.
- *T* Make sure that you edit your work.
- *T* You should be focusing on your spelling mistakes, punctuation marks, that your ideas make sense.
- *T* There are several things you need to make sure you do when writing your summary.
- *T* Indent the first line.
- T Use complete sentences.
- **T** Used transition words.
- *T* Use details from the text and place the exact words from the text in quotes.
- *T* And last, be sure you finished with a concluding sentence.

Students share their sentences as the writing process continues.

Encourage students to edit their work: spelling mistakes, punctuation marks, etc.

Students may read their paragraphs with a buddy or share with the class.

Checklist for TEACHERS

- I indented the first line only
- I started with a topic sentence (example: "The informational text explains that glaciers create icebergs which melt in the water due to thermal expansion.)
- I used complete sentences
- I used transition words (first, next, then, last)
- I used details from the text and placed the exact words from the text within QUOTES (example: The author states that thermal expansion "explains how matter changes" which demonstrates how glaciers and icebergs melt.)
 - I finished with a concluding sentence (example: The informational text demonstrates that glaciers, icebergs and ice cubes use the physical property of thermal expansion.)

Checklist for Students

- I indented the first line only
- I started with a topic sentence
- I used complete sentences
- I used transition words
- I used details from the text and placed the exact words from the text within quotes
- I finished with a concluding sentence

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BONUS LESSON

Instructional Plan: Segment 4: 30 minutes

Subject

• Geometry and Science & Haiku Poem

Objective

- <u>Students will</u> create a visual comparison of glaciers and ice cubes.
- <u>Students will</u> write a Haiku poem that captures the intent of "The Mendenhall Glacier".

Materials

- **Required:** copies of Drawing cube activity on page 14 or display a copy on a document camera
- 1 piece of lined paper
- Resources: document camera or similar device to share

Part 1: "Geometry and Science!" (15 min) Drawing a Cube activity

Pass out 1 piece of lined paper per student. If you printed the handout on page 14 for students, pass that out as well.

- *T* We have been talking about glaciers today.
- *T* What geometric solid or three-dimensional shape do you think of when you think of ice.
- *T* Hint the answer is in a phrase we use to call ice.
- *T* I may put an ice ____ in my drink.
- *T* Who knows what shape I am referring to? Call on students. Answer: cube
- *T* I am going to show you how to draw a cube today.
- T On your piece of paper, first draw a square. Model this on either the board or a document camera for students to follow. Give time for students to complete this step. Monitor and provide assistance as needed.
- T Next draw one line at a 45-degree angle, about the same length as one side of the square. Model this on either the board or a document camera for students to follow. Give time for students to complete this step. Monitor and provide assistance as needed.





consider how the role of glaciers in the world is similar to that of the ice cube and the sidewalk. Think like a scientist!

- T After that we will draw 2 more lines that are parallel, or run side by side, to the first 45-degree line. Model this on either the board or a document camera for students to follow. Give time for students to complete this step. Monitor and provide assistance as needed.
- T Last, connect the 45 degree lines so that new lines are parallel to your original square. Model this on either the board or a document camera for students to follow. Give time for students to complete this step. Monitor and provide assistance as needed.
- *T* Now, let's think like a scientist!
- *T* What happens to an ice cube on a warm sidewalk?
- *T* Now consider how the role of glaciers in the world is similar to that of the ice cube and the sidewalk.
- *T* Turn and discuss your thoughts with a partner.

Give time to complete this task. Monitor students and provide assistance as needed.

T Let's share what you and your partner discussed. Call on students to share their ideas. Annotate their ideas on the board as they share.

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Part 2: "Writing a Haiku Poem" (15 min)

Start with the back side of lined piece of blank paper:

- T A Haiku poem has only three lines.
- *T* The first line has five syllables, the second line has seven syllables, and the last line has five syllables.
- *T* These lines usually do not rhyme.
- *T* Can you capture the intent of "The Mendenhall Glacier" in a Haiku poem?

Example of Haiku poem showing syllable count in parentheses:

"The Mendenhall Glacier": a Haiku Poem

Glaciers move slowly (5) Brilliant blue is what's left (7) Calve icebergs to sea (5)

- *T* You should be focusing on your spelling mistakes, punctuation marks, and that your ideas make sense.
- *T* There are several things you need to make sure you do when writing your Haiku poem.
- *T* Make sure to write about the central message.
- *T* Check to see the first line has 5 syllables, the second line has 7, and the third line has 5.

Once you have finished I will let you read your Haiku poem with either a buddy or the whole class.

Rubric for Students

- I wrote about the intent (central message) of the text
- The first line has 5 syllables
- The second line has seven syllables
- The third line has five syllables

If there is time... Students may illustrate their Haiku poem.

Collect all papers and leave them for the teacher.

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Photo A



Photo B



Photo C



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Text #1

The Mendenhall Glacier

(1) The Little Ice Age began around 3,000 years ago. During this era the polar ice caps covered 32% of all land on the Earth. The polar ice caps had even crept into the tropical latitudes. When the ice caps eventually receded, they left behind glaciers that can still be seen today. One of these glaciers is the Mendenhall Glacier in Juneau (**joo**-noh), Alaska.

(2) The Mendenhall Glacier is a striking glacier emitting a vibrant blue hue. White, along with all other colors of the color spectrum, has been absorbed by the dense ice. The outcome is the only color visible to the human eye is cobalt blue. The impact of the unique color is captivating.

(3) A visitor to this magnificent glacier said, "The unreal blue draws your eyes as if magnetized to its depth and distinctiveness."

(4) Glaciers are rivers of ice which move slowly but surely downhill. The Mendenhall glacier travels at a rate of six to twelve inches per day. Caught inside the glacier are rocks and boulders. As might be expected when the glacier moves these rocks and boulders down the valley the debris leaves horizontal gouges in the rock walls.

(5) "The canyon's sides look like an enormous creature had clawed its way out of the ice. There are scars carved deep into the rock walls," averred a hiker.

(6) Where the Mendenhall Glacier meets Mendenhall Lake dozens of small icebergs float in the water. These icebergs were once part of the glacier before calving into the frigid water. They may slowly melt on their journey to the ocean, or if large enough, they will reach the Auke Bay as so many captured moments in time, held virtually intact inside their frozen memories.

Text #2



Thermal Expansion

(1) Have you ever seen an ice cube melt? Scientists can explain this everyday occurrence through the physics of thermal expansion.

(2) When an object changes temperature it expands, contracts, and can even change state. When you see an ice cube melt, it is warming and its state is changing from a solid to a liquid.

(3) Thermal expansion is a physical property that explains how matter changes in shape, area, and volume when its temperature is changed.

(4) If ice is exposed to heat, like sunlight or warm water, then thermal expansion will take place.

(5) Large sheets of ice cover the northern and southern poles of the Earth. When sunlight warms their surfaces, the ice melts from the top. If the ice reaches a warmer part of the ocean, the ice melts also from the bottom.

(5) What happens to an ice cube on a warm sidewalk? What is happening to glaciers? Consider how the role of glaciers in the world is similar to that of the ice cube and the sidewalk. Think like a scientist!





Ask, Answer, and Justify

- Put students in pairs: have them assign themselves a number 1 or 2
- Roles for number assignments:
 - 1's will ask the question first and 2's will respond
 - Then 2's will ask the question and 1's will respond
 - The next time 2's ask the question first

On your feet/ Get ready to meet/ Go and Greet (should take less than one minute)

- Students stand up and put their hand up in the air
- Students find another student that has their hand up to have a "new" partner (and get them moving around)
- Once they are with their new partner, they put their hands down and face the teacher

Give one & Get one

- Students share information in Ask & Justify
- Each student in the pair writes down the information shared by their partner
- If the information is already written, a check is put by the information

Back to Back and Face to Face

- When in pairs, direct students to stand back to back
- Ask the students to consider the question
- Give students at least a minute to consider their response
- Have them turn face to face
- Follow the protocol for Ask and Justify

Share out and check for understanding

- Follow the protocol for Ask and Justify
- Ask students to share their response to the question
- Verify that response or conclusion is correct
- If needed, provide clarification

(Used throughout lesson - be familiar with each protocol.) Note: Place Protocols under a document camera (if available) as necessary throughout the lessons



Make sure to "Break Up Your Day!"

These can be used in the middle of a lesson or at the end of your lesson. Here are a few engaging movement and brain break ideas to get your students moving and ready to

	refocus!
	The second secon
•	Teacher states: "I will start a story.
•	You and your shoulder buddu must continue the story using only
	cause and effects
	For example, if I said. "One day you were late to school
	The effect could be you missed breakfast at school
	The missed breakfast is now the cause and the effect of that is you
	couldn't concentrate during math
	Look of concentration is now the cause and the offect is you failed
•	Lack of concentration is now the cause and the effect is you railed
	your math quiz.
•	I had only four cause→effects: I) late, 2) missed breakfast, 3) couldn't
	concentrate, 4) failed quiz.
•	Keep going until you run out of time.
•	I will give you one minute to see how many cause and effects you and
	your buddy can find for your Chain of Events!
•	Your chain starts with, "One day I couldn't find my shoes"
	🐨 Break Up Your Day: Be a Scientist! 豜
•	A scientist separates fact from fiction or fact from opinion.
•	Listen to these 3 statements: #1Today is a school day. #2 It is a good
	dau to be a scientist. #3 We live on the planet Earth.
•	Students show teacher which statement is an opinion (answer: #2)
•	Now turn to your buddy and create 3 facts or opinions. See if your
	huddu can be a scientistl
	Monitor student statements
	Pound 2 of "Be a Scientist" can include facts or opinions from the texts
	noond z or be a scientist can include racts or opinions from the texts.
	🐨 Break Up Your Day: Thymbs Up! 😿
	Student is called on (use name cards or equity cards if available) to
	state a quality they see in themselves (kindness, honesty, hard work
	state a quality they see in themselves (kindness, honesty, hard work, humor)
	Other students signific whether they are that swellty in the machine
•	Tally their reasonable.
•	The eventities the the experiments of the selection that the selection of
•	The quality with the most votes or Thumbs Up is the theme for the
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