OER
K–5
Reading
Language Arts

ENGLISH

INNOVATION AND INDUSTRY IN ENERGY

GRADE 4 UNIT 9 | TEACHER GUIDE

EDITION 1

Grade 4 | Unit 9

Innovation and Industry in Energy

Teacher Guide

Acknowledgement:

Thank you to all the Texas educators and stakeholders who supported the review process and provided feedback. These materials are the result of the work of numerous individuals, and we are deeply grateful for their contributions.

Notice: These learning resources have been built for Texas students, aligned to the Texas Essential Knowledge and Skills, and are made available pursuant to Chapter 31, Subchapter B-1 of the Texas Education Code.

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Grade 4 | Unit 9

Contents

INNOVATION AND INDUSTRY IN ENERGY

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Introduction

INNOVATION AND INDUSTRY IN ENERGY

This introduction includes the necessary background information to teach the *Innovation and Industry in Energy* unit. This unit contains 14 daily lessons, most composed of a reading and writing segment and requiring a total of 90 minutes. Lessons 13 and 14 are devoted to celebrating student work and do not contain a reading segment. The unit also contains one Pausing Point day. It is recommended that you spend no more than 15 days total on this unit.

THE INNOVATION AND INDUSTRY IN ENERGY UNIT IS IMPORTANT

"*Energy cannot be created or destroyed; it can only be changed from one form to another.*"

– Albert Einstein

Energy is not only required for life, but it also touches every moment of our daily lives. In this unit, students explore the many ways that human ingenuity has transformed energy into the productivity at the center of our modern civilization. *Innovation and Industry in Energy* is a story of Texas and the industry that provides people with affordable energy. Throughout the unit students consider the importance of innovation, as well as the value of a diverse energy portfolio that uses a variety of energy sources.

The texts in this unit take students on a journey that follows a timeline of energy development and its impact on industrialization and urbanization. Texts begin with an in-depth look at the famous Spindletop oil discovery in Texas at the turn of the nineteenth century and move forward in time to include modern stories across the world. Students develop analytical reading skills by examining the challenges of early energy innovators. They read about current energy practices and a young energy change-maker on the other side of the world. Throughout the unit, students will conduct research into different sources of energy. They will also argue which factor is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources.

The students will use the knowledge sequence in this unit to:

- collaboratively analyze texts to identify cause–effect and problem–solution relationships.
- generate questions and conduct research about energy.
- write and revise an argumentative essay to ensure clarity, effectiveness, and organization.
- create presentations based on their argumentative essays and using primary and secondary resources.

INSTRUCTIONAL MATERIALS

Along with this Teacher Guide, you will need:

- Activity Pages
- Image Cards
- Student Readers
- Family Support Letter

To support the culminating writing task, you will need research materials to investigate a variety of natural resources, including fossil fuels and renewable fuels. Additionally, you will need computer access for each student or art supplies, such as large-format paper and coloring materials.

You will also need a classroom copy of each of the following trade books, which are available at physical and online bookstores:

- *Oil Rig Workers: Getting the Job Done* by Jill Sherman
- *The Boy Who Harnessed the Wind: Picture Book Edition* by William Kamkwamba and Bryan Mealer

WHAT STUDENTS HAVE ALREADY LEARNED

The following units, and the specific core content that was targeted in those units, are particularly relevant to the lessons in *Innovation and Industry in Energy*. This background knowledge will enhance your students' understanding of the texts they will read.

Plants: How Do They Grow? (Kindergarten)

Animals and Habitats: The World We Share (Grade 1)

Flash, Bang, Boom! Exploring Light and Sound (Grade 3)

Eureka! The Art of Invention (Grade 4)

CORE CONTENT OBJECTIVES

The following Core Content Objectives are addressed in this unit:

- Identify central ideas and key details in the text.
- Identify cause–effect and problem–solution relationships in the text.
- Make and defend a claim using textual evidence.
- Make inferences in texts and draw conclusions.
- Identify and gather primary and secondary source information.
- Draft, revise, and publish an argumentative essay.

The text that students will be reading and discussing provides opportunities for students to build content knowledge and draw connections to social studies and science. You may build on discussions to support students in making cross-curricular connection to the strands of Scientific and Engineering Practices, Recurring Themes and Concepts, and Social Studies Skills from the Science TEKS and Social Studies TEKS. This content is not a replacement for grade-level Science and/or Social Studies instruction.

WRITING

In the writing lessons, students will engage in a research and writing process to produce argumentative essays and multimodal presentations. Students will use background knowledge from the readings to generate research questions that investigate the essential question: "Argue which of those factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources." Throughout the unit, students use locally approved and classroom resources to identify and gather information from a variety of sources. They will learn about paraphrasing and summarizing through note-taking and work with primary sources as they interview classmates and family members. Using a mentor text, students will be guided through the writing process to practice revising to apply the correct use of grammar, punctuation, capitalization, and other conventions in their own writing. The culminating essay may be added to students' writing portfolios to showcase student writing. The technology applications Texas Essential Knowledge and Skills contain helpful guidance for students who complete the writing piece on a computer.

In Grade 4, students will write legibly in cursive to complete assignments. Writing legibly includes knowledge of how to connect letters and use appropriate spacing and letter height. In order to master these skills, encourage students to complete activities in cursive throughout the unit. **TEKS 4.2.C**

TEKS 4.2.C Write legibly in cursive to complete assignments.

CORE VOCABULARY FOR INNOVATION AND INDUSTRY IN ENERGY

The following list contains all of the core vocabulary words in *Innovation and Industry in Energy* in the forms in which they appear in the Read-Alouds, independent reading, and partner readings. In some instances, the words are included because they are integral to the knowledge-building within a lesson. The inclusion of the words on this list does not mean that students are immediately expected to be able to use all of these words on their own. However, through repeated exposure throughout the lessons, they should acquire a good understanding of most of these words and begin to use some of them in conversation and their own writing.

Lesson 1

carbon
cosmopolitan
diverse
energy
fuel
industry
innovation
oil
oil well
petroleum
valuable

Lesson 2

bit
blunt
boiler
buggies
claim
debris
defend
derrick
evidence
rotary drill
support
trenches
visualize

Lesson 3

ambitious
argumentative
compressed
conclusion
deposit
depression
essay
excavations
extract
film
flammable
introduction
investor
paragraph

Lesson 4

abundant
fumes
host
polluted
scams
speculators

Lesson 5

barges
contaminated
conveyor belt
demand
energy independent
goods
modifying
primary (source)
secondary (source)
synthetic

Lesson 7

biogas
fermentation
fractured
horizontally
impermeable
innovative
potential
renew
vertically

Lesson 8

admiral
atom
chemical element
generate
nuclear energy
nuclear fission
nuclear fusion
nuclear reactor
power plant
radiation
radioactive
turbine
transition
uranium

Lessons 9 and 10

batteries
generator
intermittent
mining
photovoltaic cell
reliable
renewable energy
replenished
silicon
solar farms
solar panels
space-consuming
wind turbines

Lesson 10

intended audience
subsidies

Lesson 11

derrick
green spaces
hubs
innovators
migrating
port

LESSON

1 The Story of Oil

PRIMARY FOCUS OF LESSON

Core Connections

Students will identify inventions vital to modern conveniences in a group discussion. **TEKS 4.1.A; TEKS 4.1.C**

Reading

Students will discuss the Read-Aloud, including the connection between oil and innovation. **TEKS 4.1.A; TEKS 4.6.C**

Writing

Students will generate ideas to write an argumentative essay about which factor is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources. **TEKS 4.11.A; TEKS 4.2.C**

FORMATIVE ASSESSMENT

Activity Page 1.5

Choosing an Argument Students identify text evidence that could be used to support both sides of an argument, then choose the stronger argument. **TEKS 4.11.A; TEKS 4.2.C**

TEKS 4.1.A Listen actively, ask relevant questions to clarify information, and make pertinent comments; **TEKS 4.1.C** Express an opinion supported by accurate information, employing eye contact, speaking rate, volume, enunciation, and the conventions of language to communicate ideas effectively; **TEKS 4.6.C** Make, correct, or confirm predictions using text features, characteristics of genre, and structures; **TEKS 4.11.A** Plan a first draft by selecting a genre for a particular topic, purpose, and audience using a range of strategies such as brainstorming, freewriting, and mapping; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

LESSON AT A GLANCE

	Grouping	Time	Materials
Core Connections (10 min.)			
Making Connections	Whole Group	5 min.	❏ Activity Pages 1.1, 1.2
Introducing Oil	Whole Group	5 min.	
Reading (35 min.)			
Read-Aloud	Whole Group	15 min.	❏ KWL chart ❏ enlarged projection of the text on Activity Page 1.3 ❏ Image Cards 1A–10 ❏ chart paper ❏ markers
Revisiting the Text	Partners	10 min.	
Making Predictions	Whole Group	10 min.	
Writing (45 min.)			
Read "Texas Energy: Variety is the Spice of Life"	Whole Group	20 min.	❏ Activity Pages 1.4, 1.5 ❏ chart paper ❏ markers
Interpreting a Writing Prompt	Whole Group	10 min.	
Generating Ideas for an Argumentative Essay	Small Group	15 min.	

ADVANCE PREPARATION

Core Connections

- Prepare groups of two or three students to complete Activity Page 1.1.

Reading

- Prepare an enlarged copy or projection of the Read-Aloud text on Activity Page 1.3.
- Prepare images of key vocabulary words for use with emergent bilingual students.
- Display a blank KWL chart on chart paper or a digital whiteboard. This chart should be saved and added to throughout the unit.

Know	Wonder	Learn

Writing

- Group students purposefully, providing peer models as well as peers with similar needs. Some students may benefit from homogenous groupings with adult support, as needed.

Universal Access

Reading

- Students following along on their copy may benefit from a visual aid, such as a straight edge, to assist with tracking on the page.
- Allow adequate thinking time for students to respond during the discussion. Post your guiding questions on the board and refer to them as you ask the questions.

Writing

- Provide access to a word processor with voice-to-text software or browser extension.

CORE VOCABULARY

carbon, n. a naturally occurring chemical element found in living things

cosmopolitan, adj. containing people from many places and cultures

diverse, adj. different (**v. diversify**)

energy, n. the ability to do work or cause change

fuel, n. a substance that can be burned as a source of energy
v. to supply power or energy
Example: fuel an argument

industry, n. a group of businesses that offer similar goods or services and compete for customers

innovation, n. a new process, idea, or thing

oil, n. slippery liquid made from petroleum and used for fuel

oil well, n. a shaft drilled into the ground to extract petroleum

petroleum, n. liquid found inside the earth that is removed and processed to create different products such as fuels and plastics

valuable, adj. of high worth

Vocabulary Chart for "The Story of Oil"

Vocabulary Type	**Tier 3 Unit-Specific Words**	**Tier 2 General Academic Words**
Core Vocabulary	petroleum carbon oil well oil	valuable cosmopolitan innovation
Multiple-Meaning	energy fuel industry	
Sayings and Phrases		

Lesson 1: The Story of Oil

Core Connections

10M

Primary Focus: Students will identify inventions vital to modern conveniences in a group discussion. **TEKS 4.1.A; TEKS 4.1.C**

MAKING CONNECTIONS (5 MIN.)

Activity Page 1.1

- Explain that many everyday tasks are easier thanks to modern energy sources, like coal, gas, solar, and wind, and carriers, like electricity. Display an enlarged chart, as seen on Activity Page 1.1
- Show students the examples on their copy of the chart on their activity page. Allow students to write and ask questions they have about the categories on the chart: Communication, Products, Transportation, Daily Living.
- In groups of two or three students, direct the students to complete the activity page.
- Bring the students back together and share the ideas they generated in their groups. Remind students that they are expected to express opinions with eye contact, speaking rate, volume, enunciation, and the conventions of language. Record these on the chart being displayed.

INTRODUCING OIL (5 MIN.)

Activity Page 1.2

- Introduce oil as one of the fuels that supplies energy for machines.
- Direct students to Activity Page 1.2. Review the definitions and ask students to complete the exercise on the page.

TEKS 4.1.A Listen actively, ask relevant questions to clarify information, and make pertinent comments; **TEKS 4.1.C** Express an opinion supported by accurate information, employing eye contact, speaking rate, volume, and enunciation, and the conventions of language to communicate ideas effectively.

Lesson 1: The Story of Oil

Reading

35M

Primary Focus: Students will discuss the Read-Aloud, including the connection between oil and everyday innovations. **TEKS 4.1.A; TEKS 4.6.C**

READ-ALOUD (15 MIN.)

- Remind students of the key words for the lesson *(oil, fuel,* and *energy)*.
- Display the Read-Aloud and show students where these words appear in the text.
- Ask students to identify which of the words' definitions apply in the text.
- Display the KWL chart. Tell students that the class will fill this in throughout the unit. Today we will begin by filling out the Know column using existing knowledge and what is read in the text.
- Read the text to the students.
- As ideas are added to the chart, color-code by key vocabulary word. For example, write all ideas related to oil in green, and ideas related to fuel and energy in two different colors.
- Stop at the marked points in the text to check for understanding through the discussion questions.

"THE STORY OF OIL"

Show Image 1A-1: Banana shopping

Suppose you and your grandmother get on the bus, and you go to the supermarket. All kinds of fruits are on sale there, including bananas. You pick up a bunch, along with flour, butter, and eggs. Then you take the bus home, and you make your banana bread.

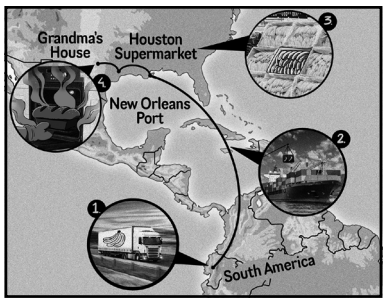
Challenge

Ask students to use context clues to prepare definitions of the additional bolded vocabulary in the text to be shared during the Read-Aloud.

Support

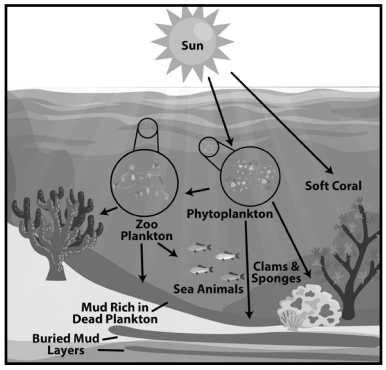
When encountering key vocabulary in the text, prompt students to refer to the definitions on Activity Page 1.2 to promote comprehension.

TEKS 4.1.C Express an opinion supported by accurate information, employing eye contact, speaking rate, volume, and enunciation, and the conventions of language to communicate ideas effectively; **TEKS 4.6.C** Make, correct, or confirm predictions using text features, characteristics of genre, and structures.



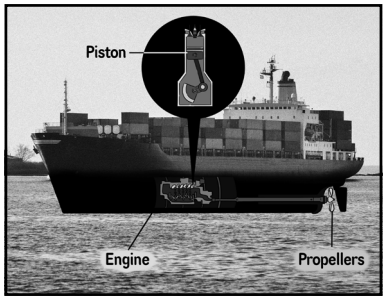
Show Image 1A-2: Banana travels

What does baking banana bread have to do with the story of **oil**? Well, have you ever asked yourself where bananas come from? In much of the United States, the answer is: somewhere else! We grow a few bananas in the United States, but most of them come to us from Asia and South America. *Why is the author discussing bananas in a story about oil? (Answers may vary.)*



Show Image 1A-3: The Formation of Oil

Have you ever stopped to think about how the food we eat is grown? In order for bananas to grow, they must go through a process called photosynthesis. Photosynthesis is the process of using energy from sunlight to create food. All plants, algae, and some microorganisms require this process to live and grow. Photosynthetic organisms live on land and in water. Once the bananas are grown on farms in South America and Asia, we use boats to transport them to the United States. It's a long way from there to here. If we didn't have boats that could make the trip fast enough, all the bananas would spoil, or become unhealthy to eat. There'd be no banana bread for anyone. *What kind of energy do bananas use to grow? (sun, or solar)*



Show Image 1A-4: Ship diagram

To get the speed they need, the people who make boat engines use a special source of fuel. Fuel is any material that can be used as a source of energy. For example, when you make a campfire, the wood you burn is the campfire's fuel. One kind of fuel in boat engines—and in many kinds of engines, in fact—is called oil. There are other kinds of oils besides the kind we burn in engines, like olive oil or vegetable oil. The kind of oil in engines is based on a fluid called **petroleum**. When it burns inside an engine, it releases gas that pushes up and down on a part called a **piston**. When the piston pumps, it starts to turn the gears of the engine very fast. And those gears turn a boat's **propellers** fast enough to get the bananas to a port, where a truck drives them to your supermarket. *What do you think turns the wheels on the truck? (fuel or engine)*

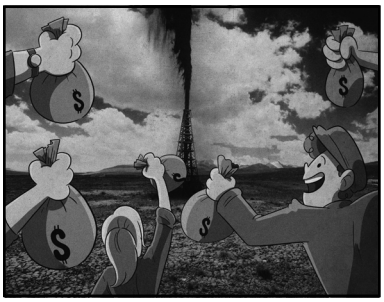
Show Image 1A-5: World without oil

Our world would be very different without oil. In the days before oil, it really was very different! People ate a less **diversified** diet, traveled less, and worked in different ways. Before oil, you might never have met anyone from outside your hometown, unless you made a very special effort because travel was slow and hard. Now people travel the world. We know more about one another than we ever did. And, in many ways, that's because of oil. *Do you know anyone who comes from a different town, or a different city, or a different country? Or have you ever been able to travel to a different town, city, state or country? (Answers may vary.)*

Show Image 1A-6: Gasoline pump

Oil is a big part of the story of our world. But what's the story of oil? Where did it come from? How did we come to start using it? How can we best use and conserve oil and other natural resources?

In this unit, we'll answer some of these questions. We'll look at how the energy stored in oil goes all the way back to the sun, which provides energy to all living organisms through the food chain that starts with photosynthesis. Over time, these living organisms died and were sealed underground. There, their bodies broke down and were slowly transformed into the oil we burn. Did you know that when buried for a long time, under high heat and pressure, organisms break down into a chemical called **carbon**? Carbon is the building block of life. Forms of carbon make up all plants and animals, including the human body. It is also the main ingredient in oil.

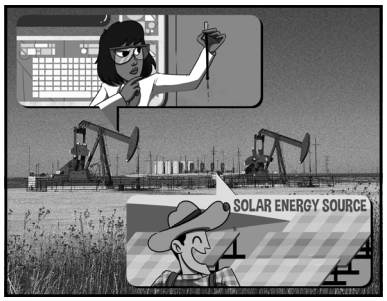


Show Image 1A-7: Spindletop

We'll also look at one of the most important discoveries of oil in modern times. That discovery happened in Texas with an **oil well**, or a hole dug in the ground to extract oil, called Spindletop, in a city called Beaumont. People had discovered oil before in many places around the world, but the Spindletop well was just the start of a huge supply of oil coming from Texas. Oil was useful to many businesses for all the reasons we talked about and others we will learn about, and that made it **valuable**, or something people wanted to pay a lot of money for. Soon, lots of oil was flowing out of Texas, and lots of money was flowing back into it.

Show Image 1A-8: Houston community

The oil business made Texas one of the richest states in the United States, but it also transformed the culture of Texas. Because oil was so important to the **world economy**, or the way goods and services are bought and sold around the world, it brought workers and their families to Houston from all across the countryThe economic opportunity brought many African-Americans from the Mississippi Delta, as well as many workers and their families from Mexico and across Latin America, all contributing to the economy and cultural diversity of Houston. Houston is now home to America's largest Hispanic population. The oil **industry** also attracted many immigrants from countries like Cambodia, Vietnam, India, Pakistan, and Iran. All these people brought their music and cultural traditions with them, too. With so many traditions and people all in the same place, talking to one another and learning from one another, Houston became a cosmopolitan city, a city with a culture that traveled the entire world.



Show Image 1A-9: Scientists

That's all part of the story of oil. And the story is still being written: no one knows yet exactly what will happen next! These days, scientists are also discovering new energy sources, including renewables, and innovating existing energy sources, such as fossil fuel production and use. Scientists are exploring how to use all of these energy sources more efficiently. For example, improvements in the efficiency of renewables by reducing the number of batteries will reduce the need for mining rare earth metals. Scientists are also looking into ways for fossil fuels to release fewer particles into the atmosphere, such as using industrial scrubbers. We'll look at some of the ideas they've had. And then we'll each become a scientist and decide which of those ideas seems like the best choice for different situations. *Can you think of other sources of energy that we might learn about? (*wind, solar or sun, hydropower or water)

Show Image 1A-10: Looking to the future

So listen carefully as we explore the story of energy! After all, one of you may be the person who writes the next chapter.

REVISITING THE TEXT (10 MIN.)

- Ask the students to answer the multiple choice question: What is the central idea of the text?

    A. Oil is a renewable energy source being explored by scientists.

    B. Oil fuels boats and planes used to ship goods around the world.

    C. Oil was discovered in Texas, which transformed the entire country.

    D. Oil is a resource that is important in the history of Texas and the world.

    (Correct Answer: D)

- Refer to the KWL chart you have prepared.
- Ask students to turn and talk to a neighbor about what they now know about oil. Ask students to share what their neighbor said.
- Encourage students to refer to the text when adding information they heard in the Read-Aloud.
- Ask students to share a question they have about oil after listening to the text.
- Record student suggestions, continuing to utilize color-coding.

MAKING PREDICTIONS (10 MIN.)

- Ask students, "Based on what we read today, what do you predict we will learn about in this unit?"
- These may be displayed on a chart paper or other classroom display for future reference.
- Introduce the culminating activity. Tell students that oil is one of several natural resources in this unit. They will be conducting their own research about natural resources that give us energy. At the end of the unit, they will write an argumentative essay about which factor is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available (such as oil, which we learned about today) or innovating to harness the potential of those resources (as we do with solar panels, which we will learn about later in the unit). First, they will read an informational text about the diversity of energy sources in Texas. Then, students will get to share their knowledge of the factors that affect Texas' diverse energy industry in the form of an argumentative essay.

Check for Understanding

Ask students to use a key vocabulary word in a sentence or restate the definition in their own words.

EMERGENT BILINGUAL STUDENTS

Speaking and Listening
Discussion

Beginning
Post images of key vocabulary as a pre-reading support. Phrase questions in a yes/no format during class discussion.

Intermediate
Provide the following sentence starters as a pre-reading support:

I know that oil . . .

I predict we will learn . . .

Advanced/Advanced High
Preview key vocabulary prior to the lesson. Help the students make personal connections to the vocabulary to build contextual understanding.

ELPS 2.E; ELPS 4.D

Lesson 1: The Story of Oil

Writing

45M

Primary Focus: Students will generate ideas to write an argumentative essay about which factor is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources. **TEKS 4.11.A; TEKS 4.2.C**

Support

Define *land cover* as the physical type of land. Give examples of types of land cover, including forests, plains, mountains, farmland, open water, and wetlands.

Note

The text explains some reasons why Texas is a leader in energy production. Help students make the connections that Texas' strong energy production creates a reliable supply of energy, which helps make Texas energy independent.

Activity Page 1.4

READ "TEXAS ENERGY: VARIETY IS THE SPICE OF LIFE" (20 MIN.)

- Tell students that throughout this unit, they will be writing an argumentative essay. Ask students what familiar word they hear in that word. *(The students should identify the word* argue.*)*
- Explain that in this case, argumentative does not mean fighting; instead, it means defending a claim. This means that they will need to take a stance on an issue and provide reasons and evidence to prove that their point is correct.
- Think-Pair-Share: Ask students to discuss why it might be important to be able to write an argumentative essay, or to provide evidence to support a point in the real world. When do people need to be able to argue their point effectively in real life? *(Answers may vary but could include making important decisions, discussing solutions, and/or discovering new things.)*
- Tell students that it is important to do research and find text evidence to support their arguments. Next, they will read an informational text that will provide a lot of text evidence that they will need to use for their argumentative essays. This informational text describes some reasons why Texas uses many different energy sources, such as oil, natural gas, wind, solar, and nuclear power.
- Have students take out Activity Page 1.4.
- Read aloud "Texas Energy: Variety is the Spice of Life." After reading each paragraph, ask a student to share the main idea of that paragraph.
- Highlight or reread the question in the last sentence for students. Explain that this question is a preview of the argumentative essay that students will be writing throughout this unit.

TEKS 4.11.A Plan a first draft by selecting a genre for a particular topic, purpose, and audience using a range of strategies such as brainstorming, freewriting, and mapping; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

INTERPRETING A WRITING PROMPT (10 MIN.)

- Display an enlarged copy of the last page of Activity Page 1.4, and read the writing prompt out loud.
- Tell students that the first step to write an effective essay is to interpret the prompt. If their understanding of the prompt is not strong, then they will not be able to write effectively.
- Ask students, "What key words in the prompt indicate that this is an argumentative essay?" *(Argue)*
- Remind students that breaking down a prompt means to carefully examine what the question is asking by understanding keywords.
- Model by explaining that the keyword *which* shows that they will choose to argue one idea or another. Tell students that they can use their own knowledge, context clues from the text, and resources like the glossary to determine the meanings of the keywords.
- Think-Aloud: I see *diversified* in the prompt. Yet, I am not sure what it means. I am going to reread the text to find some context clues that might help me. In the first sentence, I read the words *diversified* and *variety*. I do not know what *diversified* means, but I do know that *variety* indicates different types of things. This helps me understand that a "diversified energy industry" is one with a variety of types of energy. In the second sentence I see the word *diversify* again. This word is clearly important to my argument. When I re-read the prompt I see that I am supposed to argue which factor is more important in providing Texas with many *different* types of energy sources.
- Tell students that if they have tried to reread the text and are not able to use context clues to determine what a word means, they should try looking for the word in the glossary. Have a student model finding the word *innovation* in the glossary and reading the definition.
- Give students about one to two minutes to underline or highlight the keywords in the prompt on Activity Page 1.4.
- As students share other responses, highlight or underline the words on Activity Page 1.4. *(Keywords may include diversified; industry; harnesses; potential; variety; factors; diversity; natural resources; innovations.)*
- Tell students that once they have determined the meanings of keywords in the prompt, the next step is to determine what the prompt is asking them to write about. In argumentative writing, they will be asked to choose a side of an argument and provide evidence to support that side. In order to make sure they understand the prompt, they should try to restate the prompt in their own words.

Support

Pull together a small group of students who are struggling to interpret the writing prompt. Emphasize to the students that understanding the prompt is one of the most important parts of writing their argumentative essay. Guide students in highlighting or underlining the keywords and determining their meanings. Then, have students work together to discuss what the prompt is asking, rereading the text as needed.

EMERGENT BILINGUAL STUDENTS

Speaking and Listening

Discussion

Beginning
Ask the students if they agree or disagree with each side of the argument based on what they have read so far.

Intermediate
Provide the following sentence starters for participating in small-group discussion: The prompt says we will argue ____. One piece of text evidence is ___ .This evidence shows ___.

Advanced/Advanced High
Encourage the use of the key vocabulary words during group discussion.

ELPS 1.F; ELPS 2.E; ELPS 3.D

Activity Page 1.5

Challenge

Have students look ahead in the Student Reader and preview texts they will read later in the unit. Time permitting, have them find additional evidence to support their arguments in the texts that they will read later in the unit.

- Ask a student to read the part of the prompt that tells them what to argue about. Underline the line of the prompt that reads, "Argue which of those factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources."
- Think-Pair-Share: Ask students to discuss the prompt with their partner and restate what they are supposed to argue about in their own words. Remind them to work with their partners to determine the meanings of any keywords that they do not understand.
    - Have a few student volunteers share what the prompt is asking in their own words.

GENERATING IDEAS FOR AN ARGUMENTATIVE ESSAY (15 MIN.)

- Tell students that their next step after interpreting the prompt will be to decide which side of the argument they will choose. In order to do this, they will need to determine which side of the argument they can support with stronger evidence.
- Remind students that there will be evidence in the text for both sides of the argument, so it is their job to decide which side of the argument is stronger.
- Transition students into their small groups.
- Direct students to Activity Page 1.5. Students will be working in small groups to find and record text evidence that supports each of the two possible arguments that they could make in their essays.
- Give students about ten minutes to work with their groups and record the text evidence that supports each argument on Activity Page 1.5. Students are expected to write legibly in cursive to complete assignments.
- Tell students that they will need to decide independently which argument they would like to make in their essays. Remind them that either side of the argument will work, as long as they write an organized essay that is supported with text evidence.
- Have students circle the side of the argument that they will write about in their essays.
- Collect the page when the students are finished.

Check for Understanding

Ask students to use the key vocabulary words from "The Story of Oil," oil and fuel, in a sentence and restate the definitions being used in their own words. Remind students that both oil and fuel have more than one meaning.

LESSON

2

The Spindletop Gusher

PRIMARY FOCUS OF LESSON

Reading

Students will visualize the text as they read to synthesize knowledge about the formation and discovery of oil. **TEKS 4.6.D; TEKS 4.6.H**

Writing

Students will make and defend claims using supporting evidence from the reading. **TEKS 4.9.E.i; TEKS 4.9.E.ii; TEKS 4.12.C; TEKS 4.2.C**

FORMATIVE ASSESSMENT

Activity Page 2.1

Drawing a Diagram Create illustrations with text evidence captions of the events in the Read-Aloud text, "The Spindletop Gusher." **TEKS 4.6.D; TEKS 4.2.C**

TEKS 4.6.D Create mental images to deepen understanding; **TEKS 4.9.E** Recognize characteristics and structures of argumentative text by: (i) identifying the claim; (ii) explaining how the author has used facts for an argument; **TEKS 4.6.H** Synthesize information to create new understanding; **TEKS 4.12.C** Compose argumentative texts, including opinion essays, using genre characteristics and craft; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (60 min.)			
Visualizing Spindletop	Whole Group	15 min.	❏ fifty feet of string or yarn ❏ large area such as a gymnasium or playing field ❏ enlarged copy of Read-Aloud text "The Spindletop Gusher" ❏ Activity Page 2.1
Guided Visualization	Whole Group	45 min.	
Writing (30 min.)			
Writing and Defending a Claim	Independent	30 min.	❏ Activity Page 2.2 and 1.4

ADVANCE PREPARATION

Reading

- Prepare a piece of string or yarn measuring fifty feet.
- Locate a large area to measure fifty feet using a piece of string. Suggestions include a playing field or gymnasium. If available, a regulation-size basketball court, typically measuring fifty feet wide, will work well.

Note: If teaching virtually, instead obtain a paper or digital map of the community and images of the Eiffel Tower and the Golden Gate Bridge.

- Prepare an enlarged copy of "The Spindletop Gusher."

Writing

- Prepare a completed claim statement with key words removed and accompanying word bank for use by beginning emergent bilingual students.
- Prepare a list of claim statements for use by intermediate emergent bilingual students.

Universal Access

Reading

- Provide a visual reference for one foot and one meter.

Writing

- Seat students next to peers for support during Turn and Talk activities throughout the lesson.

CORE VOCABULARY

bit, n. the part of a tool that cuts, often used in drills

blunt, adj. dull

boiler, n. a tank used for heating or holding heated water

buggies, n. small, often open-top, vehicles pulled by horses

claim, n. the main idea of an argumentative text which describes the author's opinion about a topic and is supported by reasons and evidence

debris, n. small pieces of scattered material

defend, v. to demonstrate that a certain claim or idea is correct by providing evidence

derrick, n. a large wooden frame used to support drilling equipment for the extraction of oil

evidence, n. relevant and valid facts, details, or information that supports a claim, inference, or idea

rotary drill, n. a tool that works by turning a sharpened bit

support, v. to justify a statement by providing evidence of truth

trenches, n. long ditches dug in the ground

visualize, v. create a mental image

Vocabulary Chart for "The Spindletop Gusher"

Vocabulary Type	**Tier 3 Unit-Specific Words**	**Tier 2 General Academic Words**
Core Vocabulary	trenches derrick boiler rotary drill bit debris buggies	visualize evidence claim blunt
Multiple-Meaning	defend support	
Sayings and Phrases		

Lesson 2: The Spindletop Gusher

Reading

60M

Primary Focus: Students will visualize the text as they read to synthesize knowledge about the formation and discovery of oil. **TEKS 4.6.D; TEKS 4.6.H**

VISUALIZING SPINDLETOP (15 MIN.)

- Ask students to review some of the benefits of oil they read in Lesson 1. Have them look back at their brainstorm chart from Lesson 1 if they need a reminder.
- Tell the students that oil is found very deep underground. Explain that in this story, they will learn that oil is found 311 meters—or 1,020 feet—underground.
- Ask the students how big this is and if it could be compared to something of a similar size. Allow students to share a range of ideas, without reference to how accurate they may be.
- Acknowledge that a size this large is hard to imagine, or *visualize*. Tell students that *visualizing* means to imagine a picture in your head.
- Explain that the class is going to measure this distance to help visualize how deep underground the people in today's story had to dig to find oil.
- Lead students to a large area, with as much open space as possible, ideally with fifty contiguous feet (the width of a basketball court). Suggestions include a playing field, long driveway or sidewalk, or gymnasium. Using string or yarn, measure out fifty feet. Tell students that they would need almost twenty and a half more pieces of string to measure the depth of the hole dug to reach the oil underground in today's story. Display the string or yarn in the classroom upon returning as a reference for students while reading the story.

For classes learning virtually, recreate this activity using a paper or digital map and images of famous landmarks, as described in the following directions.

- Show the students a map of a familiar place, such as the school or playing field. Draw a line on the map measuring 1,000 feet (to scale of the map). Point

TEKS 4.6.D Create mental images to deepen understanding; **TEKS 4.6.H** Synthesize information to create new understanding.

out familiar landmarks at the start and end points of the line.

- Ask the students to think of other examples of objects of distances that measure 1,000 feet. Then, show images of the Eiffel Tower and the Golden Gate Bridge. Explain that 1,000 feet is a little less than the Eiffel Tower (1,060 feet at the tip) and more than the Golden Gate Bridge (745 feet above the water).

GUIDED VISUALIZATION (45 MIN.)

- After returning to the classroom, display an enlarged copy of the text, "The Spindletop Gusher."
- Read the story aloud, pausing at the following intervals: .
    - After the section labeled "A Dark Surprise" and the phrase "until the fire was extinguished."
    - The section labeled "Meanwhile . . ." and the phrase "Spindletop was filled with onlookers."
    - The end of the Read-Aloud text, "The Spindletop Gusher."
- At each pause, ask the students to first visualize what they see in their minds. Then ask the students to turn to a neighbor and describe their mental image.
- Direct the students to take up to five minutes to sketch their mental image on Activity Page 2.1. Remind students that it is not a detailed drawing, and they will have time to add to the sketch later on.
- After reading "The Spindletop Gusher," tell the students to add text evidence from the reading below their sketches. Model one example before releasing students to work.
    - Ask students to explain what details in the text helped them visualize, then describe their drawing.
    - Have a student volunteer look in the text to find a detail for their first sketch and read it aloud.
    - Say, "If I had that detail in my sketch, I would copy that sentence in the space below my sketch and the page number I found it on." Write the sentence on the board. "If you had that detail, write that sentence now. If not, find the details that match your sketch. You have space for more than one detail, if needed. Do not forget to include the page numbers."
- After the students have finished the activity page, direct them to hand in their work to you or a central location in the classroom.

Support

While adding captions to their drawings, have students find and select supporting keywords in the text instead of copying direct text quotes.

Activity Page 2.1

THE SPINDLETOP GUSHER

Show Image 2A-1: The Spindletop gusher

Hello. I'm Professor Pietro Leo, and I'm going to tell you about an incredible discovery that changed the history of Texas: a gigantic black gush that came out of the depths of the earth.

The events took place during the cold winter morning of January 10, 1901, on a small hill called Spindletop, on the outskirts of Beaumont. For years, many people had been unsuccessfully digging in the hill's ground searching for oil.

Show Image 2A-2: The Hamill Brothers Arrive at Spindletop

At that time, a group of drillers was working on the hill under the command of three men: brothers Jim, Curt, and Al Hamill. They had arrived at Spindletop on October 1, 1900, after being hired by the owner of that land, Pattillo Higgins. As soon as they got there, they looked for a place to put their equipment. They found an abandoned hut, full of rusty tools among armies of spiders and cockroaches. The men looked at one another. This was better than nothing! They all worked together to clean the hut as best they could because that would be their new home until they finished the job. For how long? No one knew.

Once they were settled in, the men got down to work. They dug **trenches** to bring water from a nearby swamp. They built a wooden **derrick** over what would be the future well. That derrick would hold the metal pipes that they would put into the ground as they dug a deep hole. Once the derrick was finished, the men mounted a **boiler** on top of it to power the steam engine that would run their digging tool.

The team planned to use a special tool called a **rotary drill**, a recent innovation as of 1845. Until then, oil had been searched for using a chisel drill, which did not rotate or turn. It pounded the earth to dig the wells. But the Hamill brothers knew that the rotary drill was best for sandy soils like the soil on that hill. The tool consisted of a rotating tube driven by a motor. At the lower end of the tube, there was a piece with sharp teeth called a **bit**. The bit rotated to cut through the sand, rock, and mud in the ground.

The First Attempts

At first, the progress had been slow because the bit would get stuck in the first sandy layers of the ground. The men poured water into the well to carry the sand out, but the sand absorbed much of the water and settled back at the bottom. After twenty days into the job, the team had reached 400 feet deep. But there were still several problems to solve. Sand was still accumulating in the hole. The drill bits were already **blunt**. They had run out of wood to feed the boiler. Wood was a common energy source in Texas during this time, but it required a lot of wood to feed the boiler because it was not an efficient energy source. With all of these problems no wonder the men were exhausted and hopeless.

Curt Hamill thought that if they poured mud instead of water into the well, the sand wouldn't absorb it as much, and the mud would help carry it out. The idea worked, and the team moved forward. At the end of the year, the men stopped work for a few days to celebrate the holidays with their families. But on January 1, 1901, they were all back.

On the morning of January 10, the drill bit got stuck in a layer of hard rocks. The men removed the tool to change the bit. Once the new one was in place, they put the drill down into the well, which had already reached 700 feet deep. And here's what I wanted to tell you about . . .

A Dark Surprise

When the drill reached the bottom, a strange hissing sound filled the air on the hill. Immediately, a thick column of mud gushed from deep in the earth, carrying with it the very heavy pieces of pipe placed inside the well. The men ran in a hurry, trying to dodge the huge pieces of metal falling from the sky toward their heads! After the mud and the pieces of pipe landed all over the place with a loud noise, the place fell silent. The men slowly and cautiously approached the derrick, ready to run away again if anything else happened.

The first thing they saw was the terrible state of the area around the well. The ground was covered by a thick layer of mud with huge pieces of pipe sticking out. Shaking their heads, the workers began to remove the **debris** with their shovels. But while they were focused on the task, knee-deep in mud, they felt the ground begin to shake with a deafening roar. Then a gigantic greenish-black jet gushed from inside the hole! What was it? Nothing less than oil!

The immense gush reached 100 feet high above the derrick. The men were covered in oil from head to toe. Dazed, they tried to wipe the oil from their eyes to see what was happening. The first thing they saw, besides the huge black

column, was a fire in the boiler they used to activate the drill. The air was filled with the natural gas and oil spewing from the well. If they didn't put out the fire soon, they all ran the risk of being blown into the air in a loud explosion! So the men began to work to put out the flames until the fire was extinguished.

Meanwhile . . .

What was going on around Spindletop as the drillers worked to put out the fire, and the gush kept going out and roaring nonstop? First, the animals ran away when they heard the loud noise. Farmers watched in amazement as the thick black liquid rained down. A carpenter building a barn dropped his tools, mounted his horse, and galloped off to nearby Beaumont to report the news.

The townspeople crowded on the roofs of their houses to catch a sight of the gigantic black column. Hundreds of others wanted to have a closer look and set out immediately, in **buggies** or on horseback, to travel the four miles to the site. Soon, the area around Spindletop was filled with onlookers. Many were probably wondering what opportunities the discovery of oil could mean for their town.

A New Era

The roaring jet that began to gush out at 10:30 a.m. on that cold, clear winter morning continued to flow nonstop for nine days. The drillers built mud dams to contain the oil. Plows were used to bury the oil-soaked ground to decrease the risk of fire. But nothing was able to fully contain the oil flowing from the well. Workers became ill from breathing the oil and fumes that filled the air as they worked. The gusher had to be cut off. Finally, the Hamill brothers succeeded in shutting it off with a risky (but effective) system of pipes and valves. Using these innovations, the Hamill brothers and other oil workers were able to solve the problems they encountered.

When silence returned, the men realized what had happened: they had just discovered the largest oil well ever seen up to that time. That "black gold" marked the beginning of a new era in the history of oil, but also in the history of Texas. Why did I use the words *black gold* to refer to oil? In the next lessons, we will be answering this question.

Check for Understanding

During the Turn and Talk activities, ask students to find their partner's evidence in the text before the partner reveals it.

Lesson 2: The Spindletop Gusher

Writing

30M

Primary Focus: Students will make and defend claims using supporting evidence from the reading. **TEKS 4.9.E.i; TEKS 4.9.E.ii; TEKS 4.12.C; TEKS 4.2.C**

WRITING AND DEFENDING A CLAIM (30 MIN.)

- Tell students that when they write their argumentative essay, they will be arguing that their idea is best. The central idea of argument writing is called a *claim*. In argumentative writing, a claim is an author's point of view or opinion that is supported by evidence.
- Explain the concept of a *claim* further by giving an example, such as:

  "After reading "The Spindletop Gusher," I might say, 'I claim that the people around Spindletop were afraid when oil was first discovered there.'"
- Write the example used on the board and circle the word *claim*.
- Invite the students to share a claim, reminding them to use the sentence starter "I claim that. . ."
- Explain that a claim is different from an idea because it is based on facts from the text. Tell the students that now they will defend claims about what happened in this story. Defending a claim is similar to trying to prove your point is correct. You use facts to support your claim.
- In argumentative writing, there can be more than one claim that could be considered correct. For example, someone could argue that the people around Spindletop were excited, not scared, when oil was first discovered. It is important that there is enough evidence to support your claim, or prove that your point is correct.
- Ask the students to think about the question "Was the discovery of oil a good or a bad thing for the people of Spindletop during this time period?" Direct the students to turn to a neighbor and share a claim based on fact from the text.
- Write the following sentence starter on the board or chart paper: "I claim that the discovery of oil was a ____ thing for the people of Spindletop during this time period because..." Direct the students to turn to a neighbor and share their claim again, but this time use the sentence starter on the board.

TEKS 4.9.E Recognize characteristics and structures of argumentative text by: (i) identifying the claim; (ii) explaining how the author has used facts for an argument; **TEKS 4.12.C** Compose argumentative texts, including opinion essays, using genre characteristics and craft; **TEKS 4.2.C** Students are expected to write legibly in cursive to complete assignments.

EMERGENT BILINGUAL STUDENTS

Reading
Visualizing

Beginning
Tell the students to express whether they agree or disagree with their partner's visualization by providing the phrases, "I agree when you say . . ." or "I disagree when you say . . ."

Intermediate
Point to or underline key words in the text to assist with visualizing.

Advanced/Advanced High
Demonstrate how to find key words in the text by pointing one out in the text and then asking the students to point out another one before continuing to work.

ELPS 1.C; ELPS 1.F; ELPS 3.G

Challenge

Ask students to provide multiple pieces of evidence to support their claim, writing a paragraph instead of a single sentence.

Support

Direct students to highlight the evidence in the text before identifying reasons to support their claims.

Activity Page 2.2 and 1.4

- Write the following sentence starters on the board: "In fact. . .," "Did you know that. . .," and "For instance, the text says. . ."
- Direct the students to turn to a neighbor and share a fact from the text that supports their claim using one of the posted sentence starters.
- Instruct students to practice making a claim by completing number 1 on Activity Page 2.2. Remind the students that these sentence starters will come in handy when writing. Tell the students they may integrate the sentence starters posted in their work if they would like to try writing with them today.
- Students are expected to write legibly in cursive to complete assignments.
- Ask the students to try out different ways to write their claims using key words from the text. Next, tell students to write one overall reason to support their claim. Tell students that these reasons will become the topic sentences of the body paragraphs in their argumentative essays. Explain to students that after they determine their reasoning and compose a topic sentence, the next step will be to develop the idea by citing relevant text evidence and explaining how the evidence supports the claim. Last, instruct students to determine which claim makes the strongest argument.
- If students finish early, have them write a quote from the text in the margins that could be used as evidence to support their claim.
- When finished, share the students' work in small groups or as a whole class.

EMERGENT BILINGUAL STUDENTS

Writing
Stating a Claim

Beginning
Provide this claim statement with the key words deleted.

I ____ that _____ is more important to the ___ of Texas energy industry.

Ask the student to complete the statement using this word bank of missing key words.

Word Bank:		
diversity	claim	(choose either) innovation or variety of natural resources

Intermediate
Provide a list of claim statements to choose from and then defend using text evidence.

Advanced/Advanced High
Tell the students to use key words from the text in the claim statement.

ELPS 1.E; ELPS 5.B

Check for Understanding

Ask the students to verbally explain why one of their possible claims makes a stronger argument than the other.

End Lesson

LESSON

3

The Beginnings of Oil in the US

PRIMARY FOCUS OF LESSON

Reading

Students will identify key events in the discovery and drilling of Spindletop using supporting text details. **TEKS 4.6.G; TEKS 4.2.C**

Writing

Students will discuss developing an engaging idea with relevant details. **TEKS 4.11.Bii**

Students will label the introduction, body paragraphs, and conclusion of a teacher model of argumentative text. **TEKS 4.9.E.ii**

FORMATIVE ASSESSMENT

Activity Page 3.1

Writing Students will retell the events from the Read-Aloud text "The Beginnings of Oil in the United States," including supporting text evidence. **TEKS 4.6.G; TEKS 4.2.C**

TEKS 4.6.G Evaluate details read to determine key ideas; **TEKS 4.11.B.ii** Develop drafts into a focused, structured, and coherent piece of writing by developing an engaging idea with relevant details; **TEKS 4.9.E.ii** Recognize characteristics and structures of argumentative text by explaining how the author has used facts for an argument; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (60 min.)			
Close Reading	Small Group	20 min.	❏ student access to the Read-Aloud texts "The Spindletop Gusher" and "The Beginnings of Oil in the United States" ❏ Activity Page 3.1 ❏ student responses to Activity Page 3.1 ❏ Teacher Resource: Activity Page 3.1 Answer Choice Bank (optional) ❏ materials to create student presentations: • computers with the capability of making a digital slide OR • poster board and markers • images from magazines OR • printed images from locally approved resources ❏ Image Cards 3A 1-3
Presenting Activity Page 3.1	Small Group/ Whole Group	40 min.	
Writing (30 min.)			
Modeling the Argumentative Essay	Whole Group	20 min.	❏ Activity Pages 3.2, 3.3, 3.4 ❏ Teacher Resources: Argumentative Essay Model and Argumentative Essay Model (Labeled)
Argumentative Writing Rubric	Partners	10 min.	

ADVANCE PREPARATION

Reading

- Prepare to direct students to Chapters 1 and 2 of the Student Reader.
- Prepare and display an enlarged copy of Activity Page 3.2, without labels, and get markers or highlighters for annotating the model during the lesson. Locate the Argumentative Essay Model (Labeled) to use as an answer key and assist with instruction.
- Seat students so that a neighbor is accessible for Turn and Talk breaks.
- Obtain dictionaries (online or hard copy) for vocabulary support.

Writing

- Pre-label Activity Page 3.2 for beginning emergent bilingual students.
- Prepare multiple answer choices to the questions assigned to intermediate emergent bilingual students.

Universal Access

Reading

- Provide a visual reference for one foot and one meter.
- Group students purposefully in heterogeneous or homogeneous groupings, depending on student need.
- Chunk the reading into manageable parts. Direct students to read one part and answer the comprehension questions on Activity Page 3.1 before moving on to the next part.
- Make an audio recording of the text or scan digital copies for use with text-to-voice software available.

Writing

- Prepare a word bank, with and without definitions, with the words *claim, introduction, body paragraph*, and *conclusion*. You may also prepare *reason* and *evidence* in the word bank.

CORE VOCABULARY

ambitious, adj. a strong desire to be successful

argumentative, adj. a genre of writing that demonstrates that a certain claim or idea is correct by supporting it with evidence

compressed, v. squeezed or pressed together

conclusion, n. the ending of a piece of writing, which restates the main idea and leaves the reader with a feeling or a call to action

deposit, n. an accumulation of material in one place

depressions, n. spots lower than the surrounding area

essay, n. a short piece of nonfiction writing that gives information or argues a position on a particular topic

excavations, n. careful or purposeful digging to uncover something

extract, v. to pull out or remove

film, n. a very thin layer

flammable, adj. easily set on fire

introduction, n. the beginning of a piece of writing, which describes the main idea and/or gets the reader interested in the topic

investor, n. someone who gives money in order to earn more money in the future

paragraph, n. a group of sentences in a piece of writing that share the same key idea

Vocabulary Chart for "The Beginnings of Oil in the US"

Vocabulary Type	**Tier 3 Unit-Specific Words**	**Tier 2 General Academic Words**
Core Vocabulary	depressions film extract deposit flammable excavations compressed	ambitious investor introduction conclusion argumentative paragraph essay
Multiple-Meaning		
Sayings and Phrases		

Activity Page 3.1

Challenge

Assign the additional critical thinking question to accompany Activity Page 3.1: "Do you consider the events of this chapter a success when weighing all the problems that were created by the oil well gushing into the air?"

Support

Indicate to the students where the information to answer their assigned questions can be found within the text, as seen in the answer key.

Lesson 3: The Beginnings of Oil in the US

Reading

60M

Primary Focus: Students will identify key events in the discovery and drilling of Spindletop using supporting text details. **TEKS 4.6.G; TEKS 4.2.C**

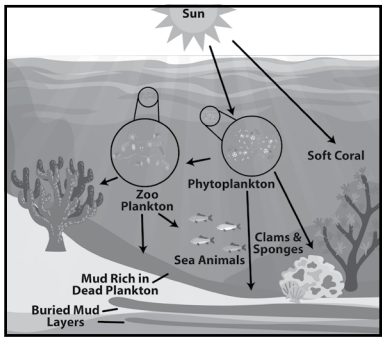
CLOSE READING (20 MIN.)

- Tell the students that today they will learn about the events that led to the oil gusher we read about in "The Spindletop Gusher."
- Assign students to groups of three or four. Direct students to read a copy of "The Beginnings of Oil in the United States" and evaluate details read to determine key ideas by answering the accompanying comprehension questions on Activity Page 3.1. Explain that for the timeline at the bottom of the page, they may add more events to the timeline than there are printed marks. Students may also choose to complete this on a separate sheet to provide more room. Review with students how to read and use a timeline, as needed.
- When the students complete their work, tell them to hand it in to you or a central location in the classroom.

THE BEGINNINGS OF OIL IN THE UNITED STATES

Show Image 3A-1: The First Oil Well

Do you remember the exciting story of Spindletop and the giant jet of oil that gushed from the ground for nine days straight? Now let's look at why the Spindletop drillers were so determined to find that strange liquid.



Show Image 3A-2: The Formation of Oil

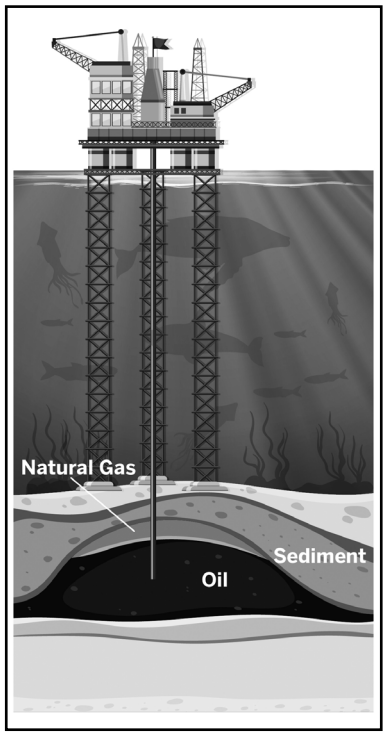
Today we know that the energy stored in oil started with the sun. Through photosynthesis, the sun's energy is used to make sugar from carbon dioxide and water. This conversion of solar energy to chemical energy is the basis of all food webs for

TEKS 4.6.G Evaluate details read to determine key ideas; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

ecosystems with access to the sun. The ocean is filled with billions of tiny plants, algae, and bacteria that undergo photosynthesis. Some of these organisms are eaten by ocean animals, transferring their energy along the way. This transfer of energy flows up through each food chain and gets stored in the cells of living creatures.

When these organisms died, they sank to the bottom of the oceans. Over the years, their remains were buried under multiple layers of rock and sand. The decomposition of these remains raised the temperature of the place where they were buried. The high temperatures, combined with the weight of the countless layers that accumulated, caused a chemical reaction that turned the remains into oil.

Once the ancient seas dried up, the oil was trapped under tons of earth at great depths. However, the strange oily liquid seeped through rocks and sand to the earth's surface in small quantities. Sometimes, it accumulated in **depressions** in the ground. Other times, it floated as an oily **film** on the water of lakes and streams.



Show Image 3A-3: Oil in History

Over time, people around the world discovered different ways to use the oil that appeared on the surface of earth. For example, the ancient Egyptians used it to make their mummies. Centuries later, medieval knights used oil to shine their metal armor. Native Americans used it in the preparation of skin ointments. Later, oil proved useful for sealing cracks in wooden boats. It was also used to grease the wheels of buggies, and it was even burned in lamps for light. There was no doubt that oil was very useful. However, until the nineteenth century, no one knew how to **extract** it from underground.

Lighting was one of the main uses that oil seemed to offer. In the nineteenth century, the main product used by Americans to light their lamps was whale oil. In spite of its ability to provide light, whale oil had an odor and was not as efficient as other energy sources. Gradually, whales became scarce and, consequently, their oil became more and more expensive. As a result, many businesspeople began to think about obtaining oil in larger quantities.

Before Spindletop, oil discoveries were made in other parts of the United States. Samuel Kier was an American chemist who owned a salt **deposit** in Titusville, Pennsylvania. One of the nearby streams was leaking oil, which made salt production difficult. Kier decided to study the strange oily and **flammable** compound. After several experiments, he succeeded in refining oil into kerosene, a material that could be used to light lamps without the smoke and odor produced by crude oil. Upon seeing the usefulness and economic potential of the strange black liquid, a businessman named George Bissell partnered with others to found an oil company.

Sprouting Oil

Bissell needed men of action to investigate the sprouting crude oil that was very common in Pennsylvania. He met Edwin Drake, who knew nothing about mining or geology but had a great ability to handle all kinds of tools, possessed a very stubborn character, and liked challenges. Bissell didn't think twice: Drake was the perfect candidate.

Drake began to work in Titusville in early 1858. At first he made small **excavations** in the form of trenches. After several months without results, Drake realized that he had to think of a more **ambitious** project. In mid-1858, he planned to drill a well many feet deep, similar to those made to extract salt. He built a wooden derrick and bought a tool to strike the rock, which was powered by a steam machine. Most steam engines during this time were powered by wood or coal. Coal powered steam engines in heavier machines, such as trains. The rotary drill had not been created yet, and his men worked for almost a year with no results. Bissell and his partners decided to stop funding the project. But Drake didn't want to give up. So, with money from his friends and a loan, he kept working to fulfill his dream. No one believed he could make it. But Drake didn't pay attention to the doubts or ridicule of others and continued to work tirelessly.

In August 1859, when the well was 69 feet deep, the drilling crew encountered a strange crack. The next morning, on August 27, Drake and his workers smelled the unmistakable odor of crude oil. They had found the first oil well in history!

After the Discovery

The discovery attracted countless businesspeople who dug hundreds of wells in Pennsylvania, Ohio, West Virginia, and Indiana. Most of the oil was refined into kerosene. While oil was refined, gasoline also appeared in small quantities. But gasoline couldn't be used for lighting because it produced explosions. (No one yet imagined the use it would have many years later.) As a result, most of the gasoline was dumped into lakes and streams near the refineries.

Spindletop Hill

In the 1890s, workers searching for water in Corsicana, Texas, accidentally discovered a small oil deposit. Meanwhile, on the outskirts of Beaumont, another Texas town, a man named Pattillo Higgins became interested in a small hill called Spindletop. Do you remember it? Higgins had noticed that Spindletop was leaking natural gas, and he knew that natural gas and oil are often found in the same place.

One day, he saw a sign advertising land for sale at Spindletop at a very good price: six dollars an acre. He started buying land with the purpose of searching for oil. Higgins had big plans. However, his excavations between 1883 and 1886 were unsuccessful.

When Higgins ran out of money, he posted an ad looking for an **investor**. Only Captain Anthony Lucas responded. After finding a small amount of oil in 1899, Lucas also ran out of money and went out to look for investors in Pennsylvania. He asked the wealthy businessman John D. Rockefeller, but he turned Lucas down because Rockefeller didn't believe there was oil in that Texan hill. However, other oil exploration businessmen, Guffrey and Galey, decided to take the risk.

Lucas told them that no one had ever been able to dig wells deeper than 400 feet on Spindletop Hill because of the sandy ground. Back then, a chisel drill was used to search for oil. A chisel drill was a very big tool that was used to drill through the rocks. But that only worked in rocky, hard areas. In sandy ground, the chisel drill just **compressed** the earth. Guffrey and Galey told him not to worry because they knew the Hamill brothers. Do you remember that name? Jim, Al, and Curt Hamill were using a new tool, the rotary drill, to dig wells over 1,200 feet deep. Do you remember how the rotary drill worked? The businessmen called Jim, the oldest of the brothers, who was working at Corsicana, to hire him. Jim sent Al and Curt to take on the new job. And you know what happened next! *What important events do you remember from the previous lesson? (Answers may vary.)*

In the next lesson, we will look at the effects these major oil-related discoveries. And very soon you will know what they are!

PRESENTING ACTIVITY PAGE 3.1 (40 MIN.)

- Assign each group a portion of the questions to present to the class, ensuring all questions have been assigned to a group.
- Distribute materials to create a presentation that shares the group's assigned questions. Presentations should include both text and images. Encourage

students to create their own images (drawing or collage) based on their visualization of the chapter and supporting text evidence.

- While students work, circulate and monitor the content of their presentations to ensure accurate responses will be shared.
- After the groups have created their presentations, give each group a turn to present their work. Prompt the group that is sharing to include the text evidence they used to support the images in the presentation.
- After each presentation, encourage the students in the audience to ask clarifying questions.
- Students are expected to write legibly in cursive to complete assignments.

EMERGENT BILINGUAL STUDENTS

Reading
Reading for Information

Beginning
Allow students to answer questions 7–10 using sketches and oral response.

Intermediate
Provide the bank of answer choices found in the Teacher Resources to choose from when working on the assigned questions.

Advanced/Advanced High
Provide access to a dictionary, or online dictionary resource, to look up unfamiliar vocabulary while reading.

ELPS 4.G

Check for Understanding

As small groups reveal the answers to the comprehension questions, ask the audience to indicate if they agree with the answer using a thumbs up or down. Ask students who disagree to defend their answer.

Lesson 3: The Beginnings of Oil in the US

Writing

30M

Primary Focus: Students will discuss developing an engaging idea with relevant details. **TEKS 4.11.Bii**

Primary Focus: Students will label the introduction, body paragraphs, and conclusion of a teacher model of argumentative text. **TEKS 4.9.E.ii**

Activity Page 3.2

MODELING THE ARGUMENTATIVE ESSAY (20 MIN.)

- Display the enlarged copy of Activity Page 3.2. You will be modeling the parts of an argumentative essay in the following steps. Refer to the labeled model in the Teacher Resources to assist you.
- Tell the students that you will read the first paragraph, or introduction, to them. Label the introduction on the class model and instruct students to do the same on Activity Page 3.2. Ask the students to listen for the claim that the essay will be defending.

TEKS 4.11.B.ii Develop drafts into a focused, structured, and coherent piece of writing by developing an engaging idea with relevant details; **TEKS 4.9.E.ii** Recognize characteristics and structures of argumentative text by explaining how the author has used facts for an argument.

"Our modern world runs on energy and the need for it increases with demand. According to the US Energy Information Administration, energy use in America alone increased more than 8 times from 1900 to 2011. Energy is used in industries such as farming, transportation, and technology, and is key for their success. One essential source of energy is natural gas, a resource that is abundant in Texas. The production and use of natural gas from Texas as the leading source of energy is critical to meet these increasing demands and ensure America's future."

- Ask the students to turn to a neighbor and share what they believe is the claim of this essay. *(The production and use of natural gas from Texas as the leading source of energy is critical to meet these increasing demands and ensure America's future.)*
- Highlight or underline the claim on the enlarged model and have students identify the claim on Activity Page 3.2. Please refer to the labeled model in the Teacher Resources for guidance if needed.
- Tell the students that you will now read the first body paragraph. Explain that this is where the writer gives a reason and provides evidence to support or defend the claim we read in the introduction. Mark this on the class model and on Activity Page 3.2.

"First, natural gas is critical to meet America's increasing energy demands because it can provide the large supply of energy needed to power our lives. Did you know that in 2011, natural gas was used more than any other source in America? It provided 30% of the total energy needed. Natural gas is extracted from shale, a type of sedimentary rock. There are large shale formations throughout Texas that hold enormous amounts of natural gas. Recent innovations in drilling techniques have enabled access to these large reserves, increasing the supply of energy available in Texas. It makes sense to use natural gas because of its abundance and its ability to meet the increasing demands for energy."

- Ask the students to turn to a neighbor and share what they believe is the reason the author is giving to support or defend the claim in this paragraph and why. *(Correct responses should include "natural gas is critical to meet America's increasing energy demands because it can provide the large supply of energy needed to power our lives" or equivalents.)*
- Guide students to look at how the author used facts to develop the idea that the production and use of natural gas from Texas is critical to meet the increasing demands for energy.

Challenge

Before labeling in the activity page, give the students a duplicate copy of the student model that has the paragraphs cut apart or jumbled. Ask the students to first reassemble or reorder the paragraphs before labeling.

Support

Highlight sentences of the essay, as seen in the marked teacher model, for the students. Ask the students to label the highlighted portions before telling them the label.

- Ask the students to turn to a neighbor and share what they believe is evidence the author is using to support the reason given in this paragraph and how it develops the idea. *(Correct responses should include "used more than any other source in America;" "provided 30% of the total energy needed;" "large shale formations throughout Texas that hold enormous amounts of natural gas," or equivalents.)*
- Mark this on the class model and on Activity Page 3.2.
- Tell the students that you will now read the second body paragraph. Explain that this is where the writer gives another reason and continues to give evidence to support or defend the claim we read in the introduction. Mark this on the class model and on Activity Page 3.2.

  > "Another reason to use natural gas is that it has fewer environmental risks than other sources of energy. It is true that using natural gas requires drilling and releases some pollutants; however, the next largest source of energy used to produce electricity is coal, which requires harmful and dangerous mining and releases more significant amounts of pollution. For example, today China uses coal as its primary energy source, leading to significant air pollution problems in that country. Other forms of energy used to generate electricity such as wind and solar generate less air pollution, but these sources also require mining and large tracts of land. Lastly, because their materials cannot be recycled, these sources still have some negative environmental impacts. (It should be noted that America has regulations that make working in mines safer and cleaner than other parts of the world.)"

- Ask students: How did the author use facts in the second paragraph to develop the idea that natural gas has fewer environmental risks? *(The author uses the reasoning that coal is harmful and dangerous mining releases more pollution, which shows that natural gas is better for the environment and that wind and solar sources require large tracts of land and the materials cannot be recycled, further strengthening the argument that natural gas has less of impact on the environment.)*
- Ask the students to turn to a neighbor and share what they believe is the reason the author is giving to support or defend the claim in this paragraph and why. *(Correct responses should include "it has fewer environmental risks than other sources of energy" or equivalents.)*
- Ask the students to turn to a neighbor and share what they believe is evidence the author is using to support the reason given in this paragraph and how this further develops the idea. *(Correct responses should include "the next largest source of energy used to produce electricity is coal, which requires harmful and*

dangerous mining and releases more significant amounts of pollution;" "wind and solar generate less air pollution, but these sources also require mining and large tracts of land;" "because their materials cannot be recycled, still have some negative environmental impacts;" or equivalents.)

- Tell the students that you will now read the third, and final, body paragraph. Explain that this is where the writer gives their final reason and evidence to support or defend the claim we read in the introduction. Mark this on the class model and on Activity Page 3.2.

> "The third major advantage of using natural gas is its reliability. Wind and solar power can only generate power when the wind is blowing or when the sun is shining. Also, there's a limit to the amount of energy from wind and solar that can be stored by the technology of today's electric companies. Because people need a constant and reliable source of energy, natural gas is the best solution. It is a dependable energy source because it can be consistently obtained from shale deposits all over Texas. Power plants are then able to generate energy 24 hours a day, 7 days a week, 365 days a year. Moreover, innovations have already improved the ability to store fuel and generate electricity from natural gas. As a result, energy production can easily be increased and decreased to match demand, making it available when it is needed."

- Ask the students to turn to a neighbor and share what they believe is the reason the author is giving to support or defend the claim in this paragraph and why. *(Correct responses should include "The third major advantage of using natural gas is its reliability," or equivalents.)*
- Ask the students to turn to a neighbor and share how the author used facts to develop the ideas in the third paragraph. *(The author uses the evidence that wind and solar energy can only be generated when the wind is blowing and the sun is shining, which shows that natural gas is more dependable because it can be consistently obtained.)*
- Explain that you will now read the final paragraph, called the conclusion. Mark this on the class model and on Activity Page 3.2.
- Ask the students what familiar word they hear in that name. Students should identify the word *conclude*. Explain that *conclude* means to finish. This paragraph finishes the argument by reminding the reader of the claim and why it is true, from the writer's point of view.

> "To sum it up, using natural gas as a core source of energy is key to maintaining our modern quality of life. The natural gas supplied by Texas provides the large amounts of energy we need. Natural gas is more reliable and has fewer environmental risks than other energy sources.

EMERGENT BILINGUAL STUDENTS

Writing
Using Vocabulary

Beginning
Instead of labeling the essay, ask the students to point out and verbally name each part of the essay on a pre-labeled copy of Activity Page 3.2.

Intermediate
Provide the following word bank with definitions to assist in labeling the essay:

Word Bank:
claim, n. the main idea of an argumentative text, which describes the author's opinion about a topic and is supported by reasons and evidence
essay, n. a short piece of nonfiction writing that gives information or argues a position on a particular topic
introduction, n. the beginning of a piece of writing, which describes the main idea and/or gets the reader interested in the topic
conclusion, n. the ending of a piece of writing, which restates the main idea and leaves the reader with a feeling or a call to action
argumentative, adj. a genre of writing that demonstrates that a certain claim or idea is correct by supporting it with evidence
paragraph, n. a group of sentences in a piece of writing that share the same central idea

Advanced/Advanced High
Preview the words introduction, body paragraph, and conclusion prior to the start of the lesson.

ELPS 3.F; ELPS 4.D

Texas can even export natural gas to other countries, helping improve the quality of life for people around the world. The next time you play outside under the lights, power up a computer, or visit the doctor's office, remember the critical role natural gas plays in powering your life!"

- Ask the students to turn and tell their partner where they see the claim, reasons, and evidence the author has restated in the conclusion. Ask for volunteers to share their findings on the class copy being displayed.

ARGUMENT WRITING RUBRIC (10 MIN.)

Activity Page 3.3

- Have students turn to Activity Page 3.3. This is the argument writing rubric that will be used as a guide to strong argument writing. Have students read through the rubric with a partner and underline or highlight key vocabulary words (claim, introduction, conclusion, etc.).
- Then have them discuss with the same partner how they would rate the essay they just labeled according to the Argumentative Essay Rubric.
- Have partners share with the class their thoughts using examples from the argument writing rubric.

Activity Page 3.4

- If time allows, have students label the argument writing piece found on Activity Page 3.4.

Check for Understanding

While modeling the argumentative essay, ask students to show their answers to the teacher prompts by pointing to the essay before turning to a neighbor during the Turn and Talk activity.

End Lesson

LESSON

4 Big Changes

PRIMARY FOCUS OF LESSON

Reading

Students will discuss how the use of cause and effect text structure contributes to the author's purpose. **TEKS 4.6.H; TEKS 4.10.B**

Writing

Students will write the introduction paragraph of their argumentative essay that addresses the question, "Argue which of those factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources." **TEKS 4.11.A; TEKS 4.11.D.ii, v–vi; TEKS 4.2.C**

FORMATIVE ASSESSMENT

Check for Understanding

Writing Describe one or more effects from the lesson and defend it as a positive or negative event, using evidence from the text in the response. **TEKS 4.6.H; TEKS 4.10.B**

TEKS 4.6.H Synthesize information to create new understanding; **TEKS 4.10.B** Explain how the use of text structure contributes to the author's purpose; **TEKS 4.11.A** Plan a first draft by selecting a genre for a particular topic, purpose, and audience using a range of strategies such as brainstorming, freewriting, and mapping; **TEKS 4.11.D** Edit drafts using standard English conventions, including: (ii) past tense of irregular verbs; (v) adverbs that convey frequency and adverbs that convey degree; (vi) prepositions and prepositional phrases; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (60 min.)			
Review Cause and Effect	Whole Group	20 min.	❏ Activity Page 4.1 ❏ Student Reader ❏ student responses to Activity Page 4.1
Close Reading	Small Group	25 min.	
Discuss the Reading	Whole Group	15 min.	
Writing (30 min.)			
Guided Writing: Introduction	Whole Group/ Independent	30 min.	❏ chart paper ❏ writing paper or word processor ❏ Activity Pages 1.4, 1.5, and 2.2

ADVANCE PREPARATION

Reading

- Have Student Readers available to view text selection.
- Post discussion sentence frames for intermediate emerging bilingual students.
- Create small groups of three to five students for shared close reading.

Writing

- Prepare to display Activity Page 3.2 and 3.3.
- Prepare chart paper or a digital whiteboard for model writing. The model should be preserved for students to refer to later.

Universal Access

Reading

- Group students purposefully to provide homogeneous groups for support or heterogeneous groups that provide positive peer models.
- Preview student answers before asking students to share their work.

Writing

- Make word processors and/or wide lined paper available as students write their drafts.

CORE VOCABULARY

abundant, adj. to exist in a large amount

fumes, n. strong-smelling vapor or gas, often emitted from chemicals

host, v. to receive guests

polluted, adj. dirty; unclean

scams, n. purposefully deceptive plans or acts

speculators, n. investors hoping to make a profit

Vocabulary Chart for "Big Changes"		
Vocabulary Type	**Tier 3 Unit-Specific Words**	**Tier 2 General Academic Words**
Core Vocabulary	speculators polluted	fumes scams host abundant
Multiple-Meaning		
Sayings and Phrases		

Activity Page 4.1

Start Lesson

Lesson 4: Big Changes

Reading

60M

Primary Focus: Students will discuss how the use of cause and effect text structure contributes to the author's purpose. **TEKS 4.6.H; TEKS 4.10.B**

Challenge

Provide a blank chart in lieu of Activity Page 4.1. Direct students to check their work using the scaffolding chart provided on Activity Page 4.1.

Support

Provide a bank of correct cause or effect statements to the exercise on Activity Page 4.1 on a separate page. Direct the students to select an appropriate cause or effect from the bank.

REVIEW CAUSE AND EFFECT (20 MIN.)

- Remind students that during the last lesson they read "The Spindletop Gusher" and "The Beginnings of Oil in the United States." In those readings, the oil workers had many challenges to solve. Ask students to recall and share one of those challenges.
- Ask students to review some of the benefits of oil they read in Lessons 1 and 3.
- Draw or display the chart shown below on chart paper or a digital whiteboard. Record the students' contributions in the chart.

Challenges in "The Spindletop Gusher" and "The Beginnings of Oil in the United States"

Cause	Effect/Problem	Solution
The sand was only compacted, and it refilled the hole when removed. Sand and water easily clogged the hole being drilled.	Heavy chisel drills did not go through the sandy ground. The drilling progress was extremely slow.	The crew used a rotary drill to cut through the sandy ground. The crew mixed mud into the hole to help remove the sand.

- Display this completed chart as a model while the students work on Activity Page 4.1

CLOSE READING (25 MIN.)

- In small groups, direct students to read the text "Big Changes." After reading, direct the students to work together, in groups of three to five students, to complete Activity Page 4.1.

TEKS 4.6.H Synthesize information to create new understanding; **TEKS 4.10.B** Explain how the use of text structure contributes to the author's purpose.

Show Image 4A-1: The Oil Boomtowns

Do you remember the oil well that flooded Spindletop Hill with oil for nine days until the drillers found a way to stop the immense gusher they had discovered? And do you recall that Spindletop Hill was on the outskirts of a quiet Texas town called Beaumont? Today we're going to learn about the great changes that its residents experienced after the discovery of the largest oil well known until then.

Beaumont Wakes Up

In the days and months following that discovery, crowds poured into the sleepy town of Beaumont. Many newcomers were tourists who wanted to visit the hill that had suddenly become famous. The road from Beaumont to Spindletop was filled with buggies and horses carrying hundreds of visitors eager to stroll through the oil-saturated fields. Along with the tourists came businesspeople and **speculators** who wanted to buy the neighboring land. Many men seeking employment also arrived, and they were soon hired by the new oil companies. Even men without any experience in drilling had the chance to earn two or three dollars a day: double the pay earned by workers in the rest of the country.

Exploration derricks increased rapidly all over the hill. By the spring of 1901, there were 138 oil wells. Most were concentrated in an area of 15 acres. That is close to eleven football fields with twelve derricks on each field. Walkways made of wooden planks filled the land flooded with mud and oil. The air on the hill was unbreathable due to the greasy mist of oil, the **fumes** from the boilers that powered the drills, and the smoke from the kerosene-fueled lamps. And, to top it all, many workers fainted from breathing in the natural gas that surfaced along with the oil.

Population Changes

Until January 1901, when the discovery took place, there were nine thousand people living in Beaumont. But in the three months that followed, that number rose to fifty thousand! Soon there were not enough hotels or rooms to accommodate the growing crowds of newcomers. The exhausted oil well

workers slept in tents and even rented pool tables, store windows, barbers' chairs, or office desks to spend the night.

It was difficult to satisfy the hunger of the crowds that arrived daily in Beaumont. Many cafeterias and food stores remained open through the night. Another problem was providing enough clean drinking water for everyone. Many newcomers got sick from drinking water from **polluted** streams and rivers. In addition, freshwater sources were breeding grounds for mosquitoes, which feasted on the workers who slept in tents or spent the night in the streets. Some of these mosquitoes spread serious diseases, such as malaria.

This led to another problem: health care. Now there weren't enough doctors to treat all the sick and injured people. Inexperienced oil well workers would often get hurt when handling the huge digging tools. Fires, and even explosions, were also frequent. However, none of these terrible conditions reduced the number of trains arriving daily with people from faraway places like Philadelphia or New York.

New Towns

The land that Pattillo Higgins had bought at six dollars an acre a few years earlier was now selling for as much as a million dollars an acre. Many newcomers made fortunes, but many others were left in ruin from land sale **scams**, which were common.

As the opportunities to make money in Beaumont increased, the newcomers multiplied by the thousands. Among them were many honest people, but there were also gamblers and thieves. Street riots were becoming more frequent. The local police couldn't cope with all the calls for help from the neighbors. Beaumont residents were terrified. The sheriff advised them to stay indoors and padlock their doors if they wanted to stay safe.

In the few months following the discovery of the first well, new towns were formed around the well excavations. One of these was Gladys City, which consisted of a group of wooden buildings that included a post office, a newsstand and candy store, a photography studio, and a general store that sold all kinds of goods needed for daily life. There were also bedrooms and cafeterias to **host** and feed the oil drillers. Drilling for oil had increased nonstop after the discovery of 1901. Where once there were only trees and grass, now the number of derricks was growing every day.

Too Much Oil

Prior to 1901, ninety percent of U.S. oil had been produced in the East Coast. But the first Spindletop well went on to produce more oil than all the Pennsylvania wells combined.

By the end of 1901, oil prices had fallen from a dollar a barrel to three cents a barrel. And do you know why? Because there was too much oil available to buy. The main product of oil was kerosene, which was used for lamps. But there weren't enough lamps in the United States to burn the enormous quantities of oil gushing out of Spindletop. New profitable innovations for this **abundant** natural resource had to be discovered urgently.

We are out of time for today. But don't worry—I'll be back so that together we can see what those new uses and innovations were.

DISCUSS THE READING (15 MIN.)

- In a whole group, ask students to share their answers to Activity Page 4.1. When sharing the State a Claim response at the bottom of Activity Page 4.1, ask students whether they agree or disagree. Encourage students to defend their choice.

Check for Understanding

Designate one side of the room "Cause" and the other side "Effect". In random order, read one cause or effect from the chart. Ask students to move to the side of the room that matches whether the statement is a cause or effect.

EMERGENT BILINGUAL STUDENTS

Reading
Finding Cause/ Effect Relationships

Beginning
When a student is called during discussion, ask multiple choice questions. For instance, is _____ a cause or an effect?

Intermediate
At the start of reviewing cause and effect, post sentence frames for use during that discussion. Show their location and read these aloud to the students before beginning.

Advanced/Advanced High
At the start of working on Activity Page 4.1, preview the discussion topic by telling the students that the class will be sharing answers when the page has been completed.

ELPS 3.F; ELPS 4.D

Lesson 4: Big Changes

Writing

30M

Primary Focus: Students will write the introduction paragraph of their argumentative essay that addresses the question, "Argue which of those factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources." **TEKS 4.11.A; TEKS 4.11.D.ii, v–vi; 4.2.C**

GUIDED WRITING: INTRODUCTION (30 MIN.)

- Display Activity Page 3.2. Ask the students to identify which paragraph is the introduction. *(Students should identify the first paragraph.)*
- Ask students to identify how the paragraph ends. *(Correct responses should include reference to a central idea or claim.)*
- Have students review Activity Pages 1.4 and 1.5. How have their thoughts changed since this lesson? Is there any evidence they want to add? Take some time to review the claim they chose to write about. Remind students that they should also look at Activity Page 2.2 to revise their claims if needed.
- Tell students that a strong introduction should get readers interested in the topic and state the main ideas of their essay. Their introduction paragraph should include an interesting introduction to the topic, a clearly stated claim, and a brief description of the reasons that supports their argument.
- Using chart paper or a digital projection, demonstrate how to write an introduction paragraph using a think-aloud while the writing is being modeled. The following text may be used in this demonstration:

  "The sources that we have gotten our energy from have changed a great deal over the course of history. It is clear that there are higher needs for energy than ever before in history, and our daily lives depend on getting consistent and dependable energy. The energy industry in Texas creates a reliable supply of energy by using diverse energy sources. Innovating is the most important factor to the diversity of the Texas energy industry because innovations allow us to harness the potential of natural resources."

- Explain that the students will be learning more about oil and other fuels during the unit to help them support their claim and develop their ideas. Invite the

Challenge

Have students exchange paragraphs with another student and give feedback to each other. Direct the students to ask each other, "Did you understand my claim?" and "Did I back up my claim?" Remind the students that yes/no responses are not helpful feedback for their classmates.

Activity Page 1.4, 1.5 and 2.2

TEKS 4.11.A Plan a first draft by selecting a genre for a particular topic, purpose, and audience using a range of strategies such as brainstorming, freewriting, and mapping; **TEKS 4.11.D** Edit drafts using standard English conventions, including: (ii) past tense of irregular verbs; (v) adverbs that convey frequency and adverbs that convey degree; (vi) prepositions and prepositional phrases; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

students to take a few minutes of thinking time to consider what reasons and text evidence they may use to support their claim.

Check for Understanding

Ask students to underline the claim in their introduction paragraphs.

- Remind students what they have learned about irregular past-tense verbs, adverbs that convey frequency and degree, and prepositions.
- As they write, encourage them to look for correct use of irregular past-tense verbs, such as *drive/drove, meet/met,* and *see/saw*. Students are expected to write legibly in cursive to complete this assignment.
- Remind them that adverbs that convey frequency tell how often something happens, and adverbs that convey degree tell how much or to what degree. Provide the following sentence as an example: *Samir always cleaned the art area completely*. Point out that *always* shows how often the action is done, and *completely* shows to what degree the action is done.
- Point out that students can also clarify their ideas by adding prepositions and prepositional phrases to indicate where or when something exists.
- Encourage students to include adverbs and prepositions in their writing to add specificity and interest.
- Direct students to write a rough draft of an introductory paragraph for their essay. Remind students that they will revise this later on and may even change their claim as they learn more about the energy industry in Texas.
- After completing the draft of the introductory paragraph, direct students to complete and hand in the following Check for Understanding. This Check for Understanding can be completed on paper, a sticky note, or a notecard.

Check for Understanding

Describe one or more effects from the lesson and defend it as a positive or negative event, using evidence from the text in the response.

End Lesson

Challenge

Ask students to discuss how they can grab, or hook, the reader's interest in the first line of their introduction so that their audience wants to read the full essay. Tell students that good hooks (1) are clear and concise; (2) relate to the claim; and (3) help show the reader why the topic is interesting.

EMERGENT BILINGUAL STUDENTS

Writing
Writing an Introduction Paragraph

Beginning
Provide the following cloze model of an introductory paragraph as a starting point for writing:

_____ is an important topic. It is important because _____. In fact, did you know _____? That is why I believe _____.

Intermediate
Allow the students to verbally rehearse the paragraph before writing with a partner.

Advanced/Advanced High
Read the students' writing aloud, without any corrections, to the student. Ask the students to identify any areas that did not sound clear as a listener.

ELPS 1.B; ELPS 1.C

LESSON

5 Innovations to Fuel

PRIMARY FOCUS OF LESSON

Reading

Students will use text-based evidence to make inferences about the discovery of oil and predict its resulting innovations. **TEKS 4.6.F; TEKS 4.6.C; TEKS 4.2.C**

Writing

Students will generate questions and conduct interviews to gather primary source information. **TEKS 4.13.D; TEKS 4.2.C**

FORMATIVE ASSESSMENT

Activity Page 5.1	**Writing** Students will respond to the prompt: "How did the discovery of oil impact the lives of people after the large discovery at Spindletop?" **TEKS 4.6.F; TEKS 4.2.C**
Check for Understanding	Define and provide an example of primary and secondary sources. **TEKS 4.13.D**

TEKS 4.6.F Make inferences and use evidence to support understanding; **TEKS 4.6.C** Make, correct, or confirm predictions using text features, characteristics of genre, and structures; **TEKS 4.7.E** Interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating; **TEKS 4.2.C** Write legibly in cursive to complete assignments; **TEKS 4.13.D** Identify primary and secondary sources.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (45 min.)			
Close Reading	Small Group	45 min.	❑ "Innovations to Fuel" in Student Reader ❑ Activity Page 5.1
Writing (45 min.)			
Identifying Primary and Secondary Resources	Whole Group	15 min.	❑ Activity Pages 5.2, 5.3
Collecting Primary Source Information	Independent	30 min.	

ADVANCE PREPARATION

Reading

- Have Student Readers available for text selection.
- Arrange small groups of three to five students for close reading

Writing

- Prepare an enlarged copy of the model interview.
- Prepare sentence frames for emergent bilingual students.

Universal Access

Reading

- Group students purposefully in homogenous groups for additional support or in heterogeneous groups to provide positive peer models.

Writing

- Encourage the use of sentence starters such as:
    - What do you know about ...?
    - Can you tell me more about ...?

CORE VOCABULARY

barges, n. large, flat-bottomed ships used to transport goods

contaminated, adj. soiled or unfit for use

conveyor belt, n. a thin surface that moves along a looped track for the purpose of transporting an object

demand, n. an amount of product or service wanted at a certain time

energy independent, n. the state of not needing to rely on other states or countries to provide energy sources to meet energy needs

goods, n. products

modifying, v. changing for a specific purpose

primary (source), n. first; information that comes from someone who experienced an event firsthand

secondary (source), n. second; a source that is two or more steps removed from the original accounts of an event or experience (e.g., scholarly articles, journalism, reference books such as encyclopedias, history books, textbooks, reviews, or criticisms)

synthetic, adj. artificial; not made by nature

Vocabulary Chart for "Innovations to Fuel"

Vocabulary Type	**Tier 3 Unit-Specific Words**	**Tier 2 General Academic Words**
Core Vocabulary	contaminated barges conveyor belt energy independent	modifying goods synthetic demand primary (source) secondary (source)
Multiple-Meaning		
Sayings and Phrases		

Start Lesson

Lesson 5: Innovations to Fuel

Reading

45M

Primary Focus: Students will use text-based evidence to make inferences about the discovery of oil and predict its resulting innovations. **TEKS 4.6.F; TEKS 4.6.C; TEKS 4.2.C**

Challenge

Have students describe how the author seems to feel about coal and oil in paragraphs 9-11. Ask the students to identify words and phrases the author used to send a message about the replacement of coal with oil.

Support

Group students in need of support homogeneously and guide the group through additional examples, gradually releasing the students to continue on their own.

Activity Page 5.1

CLOSE READING (45 MIN.)

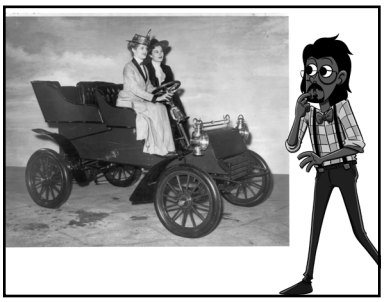
- Ask students to recall the problems that arose when extracting the oil from the ground. *(Answers will vary but should include the amount of oil they had collected.)*
- Ask students to review some of the drawbacks of oil they read in Lesson 4.
- Remind students that this was the first time it was collected in such a large amount.
- Ask students to think about inferences, or conclusions, they can draw about the types of skills the workers needed to extract oil from the ground.
- Tell students that when they are making an inference about the skills that workers needed, they should draw a conclusion from the text about what the workers had to be really good at doing to discover oil.
- Allow students to turn to a partner to make inferences about three skills that the workers needed to discover oil. *(Answers will vary.)*
- Have a few student volunteers share their inferences with the class.
- Tell the students that the text they will read is about how oil led to changes, or innovations, in the fueling of machines.
- Tell the students that when we make inferences, or draw conclusions, from our reading, it helps us to make a prediction about the text. Ask the students what a *prediction* is. After hearing responses, explain that a prediction is a guess about what will happen next. Ask the students if they can make a prediction.
- Ask the students to predict what uses for oil may appear in the text. Which uses do you think we still use today?
- Assign the students to groups of three to five. Direct students to read a copy of the text "Innovations to Fuel" and complete the accompanying Activity Page 5.1. Students are expected to write legibly in cursive to complete assignments.
- After the groups have completed their work, shuffle the group's members to create new groups and ask the students to compare their responses to Activity Page 5.1.

TEKS 4.6.F Make inferences and use evidence to support understanding. **TEKS 4.6.C** Make, correct, or confirm predictions using text features, characteristics of genre, and structures; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

- After comparing their work, direct the students to turn in the activity page to you or to a central location in the classroom.
- If time allows, provide scoring guidelines for the Think About It question in Activity Page 5.1. To obtain full credit (2 points), the student will write a complete response that:
    - explains the main message of paragraphs 9 through 11.
    - includes at least one piece of supporting evidence from the text.
    - cites the text evidence with paragraph numbers.
    - uses evidence accurately to support the response.

  (Possible student answer: The main message of paragraphs 9 through 11 is that the replacement of coal with oil was good for companies. The text says, "oil offered great advantages over coal." This tells me that the author wants the reader to know that using oil for fuel was better for companies than using coal.)

INNOVATIONS TO FUEL



Show Image 5A-1: The 1903 Automobile

Do you remember Spindletop? Last time, we saw the great changes that happened in the lives of the local people during the days and months following the discovery of the largest oil well known until then.

Today we're going to look at other changes that took place over time for the people of Beaumont, the rest of the country, and the whole world.

The Oil Industry Grows

During the year following the discovery of Spindletop, the Texas oil industry grew enormously. The United States became the world's major oil producer. Many of the country's most important oil companies were born and grew thanks to this discovery, among them Texaco, the shortened name of the Texas oil company. These companies made money selling oil in the United States and abroad. In fact, after Spindletop oil production in the United States tripled. Though some countries in Asia and Europe were beginning to find oil too, many relied on the United States to meet their oil needs. They did not become **energy independent** until they were able to produce the oil they needed without buying from other countries.

Support

Ask students: Why might a country or state want to be energy independent? *(reliable supply; more freedom; producing their own energy creates more jobs.)*

As we saw in the previous lesson, the oil extracted from Spindletop wells was more than the **demand** for the main product manufactured at that time with this resource: kerosene to light lamps. And what do you think was done with the oil that wasn't used? It was stored in tanks, which weren't well made and **contaminated** the soil and freshwater sources.

Wooden and metal tanks were built throughout Spindletop Hill to store the oil. Tanks were also built that trains and **barges** could use to transport the extra oil to be sold across the country. Although it was known that oil could be a good fuel for steam-powered forms of transportation, train and ship engines were still using coal. Do you know why? Because oil was more expensive, and it was hard to get.

Changes in Transportation

The first type of transportation to switch from coal to oil were trains in Texas and the Southwest. The coal that fueled those trains was bought far away on the East Coast at very high prices because it had to be transported over hundreds of miles. But the discovery of Spindletop changed this situation greatly. From then on, oil became an abundant, cheap, and local resource in Texas.

The Texas train experiment was so successful that other train companies also made the change from coal to oil. Ship companies that transported **goods** to other regions of the country and the world also joined.

The change from coal to oil didn't require **modifying** the engines. Both train and ship engines were powered by boiling water to make steam. All that was needed was to change the boilers' fuel from coal to oil.

Oil offered great advantages over coal. For example, oil burns cleaner than coal. Another interesting fact is that oil is a more dense form of energy. This means that there is a lot of power in this form of energy compared to other forms. Coal took up much more space, especially for ships that made long trips. Many men were needed to load the coal onto the ships for several days. Once the coal was on board the ship, other men had to take turns shoveling the coal into the furnaces, where the water for the boilers was boiled. The boiler rooms, located below deck, were very hot places to work!

On the other hand, oil was loaded by a few men in a few hours. Once on board, the oil was stored in tanks. The oil furnaces were also smaller and didn't need shovelers.

The replacement of coal with oil, both on trains and ships, freed up much of the space that was previously used to store fuel and power engines. This was an added advantage for companies because now there was more room to transport goods, and they could make more money.

The Automobile Is Born

The U.S. oil market continued to grow steadily during the early twentieth century. New uses for oil spurred new exploration and successful drilling in other parts of the country, but especially in Texas. The oil business was growing, just in time to welcome a new invention: the automobile!

In the late nineteenth century, many inventors experimented with the use of engines to realize the dream of building a "horseless buggy," that is, a buggy capable of moving on its own.

One of the first automobile manufacturers in the United States was Henry Ford. In 1896, Ford built a four-wheeled bicycle powered by a small engine, but without brakes or a reverse gear. One of the first automobile manufacturers in the United States was Henry Ford. In 1903, when his designs had improved, Ford founded his famous automobile company. But his breakthrough came in 1908 with the creation of the Model T.

The Model T, which reached speeds of 25 miles per hour, was the first American automobile built using the assembly line method. The assembly line was a **conveyor belt** with workers stationed at different locations. Each worker performed a specific task and then passed the product to the worker next to them. This made it possible to produce automobiles at a low cost and very quickly. The production of automobiles boosted the U.S. oil industry.

World War I further strengthened the country's oil industry. Many U.S. ships had oil-fueled boilers. Military vehicles and aircraft ran on gasoline too. By the end of the war, the use of automobiles had increased in every city. This led to the construction of highways throughout the country.

However, gasoline wasn't the only important use of oil. Gradually, oil became a necessary material for many other comforts of modern life. The plastic used today to make toys or to package food is also made from crude oil. So are **synthetic** fabrics, such as polyester and nylon. Oil is also used for heating homes, paving roads, waterproofing roofs, making medical supplies, and in many other products. Today we have become so used to these and many other innovations that it's difficult to imagine a world without oil.

In the next lesson, we'll see what is happening today with oil and how some people are now using renewable sources of energy instead. Do you want to know what those sources are? I'm sure you'll be interested.

Check for Understanding

Post the definition of *innovation* from Lesson 1 on the board. Ask students to underline or highlight solutions in the chart on Activity Page 5.1 that could be considered innovations.

EMERGENT BILINGUAL STUDENTS

Reading
Reading for Information

Beginning
Allow the students to draw a diagram of the problem and solution listed on Activity Page 5.1.

Intermediate
Provide the following sentence frame for use with Activity Page 5.1:

People's lives changed because ____.

Advanced/Advanced High
Ask the students to name examples of modern innovations to provide context for the key vocabulary word innovation.

ELPS 1.A; ELPS 1.C

Lesson 5: Innovations to Fuel

Writing

45M

Primary Focus: Students will generate questions and conduct interviews to gather primary source information. **TEKS 4.7.E; TEKS 4.2.C**

Activity Page 5.2

IDENTIFYING PRIMARY AND SECONDARY RESOURCES (15 MIN.)

- Direct students to the information about primary and secondary resources at the top of Activity Page 5.2.
- Review the definitions of primary and secondary sources and uses for primary and secondary resource information.
- Direct students to practice identifying primary versus secondary sources in the Practice section of the Activity Page 5.2. When finished, ask the students to compare their work with a neighbor and then review the correct response with the whole group. Tell the students to wait to complete the Try It Out! section until told to do so.

Check for Understanding

Label one side of the room as primary and the other as secondary. Hold up or project primary and secondary source information examples. Ask students to move to the side of the room that matches the example.

Activity Page 5.3

COLLECTING PRIMARY SOURCE INFORMATION (30 MIN.)

- Tell the students that they will collect primary source information using interviews as part of their research. Remind students that most people have background knowledge about energy because we all use it daily. Their classmates, families, and even teachers can all be useful sources of primary source information.

TEKS 4.7.E Interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating; **TEKS 4.13.D** Identify primary and secondary sources; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

- Tell the students that they will collect primary source information to use in their essays by conducting an interview. An interview is when you ask a person questions and collect their answers. You will be interviewing a classmate about energy.
- Tell the students to think back to the question that we are trying to answer: "Argue which of those factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources."
- Then have students ask themselves, "What kind of evidence or facts could I find in an interview that would help to support my claim and reasons?"
- Ask the students if they have a question in mind that could be answered with information from an interview of someone they know. For example, if your friend's claim is about the availability of solar power because they use it at their home, that is a good person to interview about that topic because they have some knowledge. Another friend might have a parent or family member that works for an energy company, that might be another good person to interview.
- Ask for volunteers to share who they might interview to gather more information. When sharing, prompt students to include what questions they are trying to answer through the interview.
- Direct students to write their interview questions in the Try It Out! section of the Activity Page 5.2. Students are expected to write legibly in cursive.
- When ready, students should conduct interviews with classmates using Activity Page 5.3. This may also be conducted during the Conducting Research writing segments of Lesson 6 or Lesson 7. Some students may choose to bring Activity 5.3 home to interview a family member at home.
- At the end of the class, tell the students to complete the following Check for Understanding and hand in their work.

Support

Encourage thinking backwards. Ask the students what kind of answers they are looking for and then reverse-engineer the question together. Say to the student, "What do you want to learn from the interview?" *(Example: "I want to learn if this person uses renewable energy.")*

"Pretend the person you are interviewing gave you the exact answer you are looking for. What would they say?" *(Example: "I may hope for someone to say, 'Yes, we have solar panels on our house.'")*

"Turn that answer around to form a question." *(Example: "Do you use some kind of renewable energy in your home?")*

Challenge

Tell the students to write an additional follow-up question for at least one of their interview questions. Explain that you may not get all the information you are looking for from the first question. Provide the following sentence starters to generate ideas:

"How did you first learn about _____?"

"Why do you think that about _____?"

"Would it change your mind if I told you that _____?"

EMERGENT BILINGUAL STUDENTS

Writing
Generating Interview Questions

Beginning
Provide the following sentence frames to generate interview questions.

What do you know about ___?

Do you use ___? Why?

How does ___ work?

Where could I find ___?

Intermediate
Give the students sentence frames to generate questions and allow the students to collect written responses from the interview subject or record the interview.

Advanced/Advanced High
Preview the terms *primary* and *secondary*, emphasizing the connections to *first* and *second*. Ask the students to explain the difference between the two.

ELPS 1.C; ELPS 1.E

Check for Understanding

Define and provide an example of primary and secondary sources.

End Lesson

LESSON

6 Oil Today

PRIMARY FOCUS OF LESSON

Reading

Students will identify and compare the challenges of early oil workers in "The Spindletop Gusher" to modern workers in *Oil Rig Workers.* **TEKS 4.6.E**

Writing

Students will take notes from the reading for use in their argumentative essay body paragraphs. **TEKS 4.13.D; TEKS 4.2.C**

FORMATIVE ASSESSMENT

Note-Taking T-chart Develop research questions and take note on a T-chart. **TEKS 4.7.E; TEKS 4.2.C**

TEKS 4.6.E Make connections to personal experiences, ideas in other texts, and society; **TEKS 4.2.C** Write legibly in cursive to complete assignments; **TEKS 4.7.E** Interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (30 min.)			
Close Reading	Small Group	30 min.	❏ *Oil Rig Workers: Getting the Job Done* by Jill Sherman ❏ Activity Page 6.1
Writing (60 min.)			
Planning for Writing and Research	Whole Group/ Independent	20 min.	
Student Research	Whole Group	40 min.	❏ Activity Pages 1.4, 1.5, and 6.2 ❏ research materials to investigate the natural resources available in Texas and innovations in the energy industry.

ADVANCE PREPARATION

Reading

- Prepare small groups of three to five students for the reading activity.
- Create or find audio of the text to assist struggling readers.

Writing

- Gather resources, including books, magazines, and locally approved resources regarding energy and fuels that provide varied perspectives. School and local libraries may be beneficial repositories of materials.
    - These materials may take the form of what is available on the subjects of renewable and nonrenewable energy from locally approved resources. Be mindful to make materials varied and text complexity at all levels available to meet the diverse learning needs of your students. Include some materials that incorporate visual supports such as illustrations, photographs, and diagrams. Digital materials may also have audio to accompany them which makes the text accessible to more students. Display the materials so they are organized and easily accessible to students.

Universal Access

Reading

- Provide access to an audio copy of the text or preview the text prior to class.

Writing

- Make electronic copies of note-taking T-charts available for use with voice-to-text software or browser extensions.

CORE VOCABULARY

primary (source), n. first; information that comes from someone who experienced an event firsthand

secondary (source), n. second; a source that is two or more steps removed from the original accounts of an event or experience (e.g., scholarly articles, journalism, reference books such as encyclopedias, history books, textbooks, reviews, or criticisms)

Vocabulary Chart for "Oil Today"		
Vocabulary Type	**Tier 3 Unit-Specific Words**	**Tier 2 General Academic Words**
Core Vocabulary		primary (source) secondary (source)
Multiple-Meaning		
Sayings and Phrases		

Start Lesson

Lesson 6: Oil Today

Reading

30M

Primary Focus: Students will identify and compare the challenges of early oil workers in "Spindletop Gusher" to modern workers in *Oil Rig Workers*. **TEKS 4.6.E**

CLOSE READING (30 MIN.)

- Ask students to review some of the benefits of oil they read in Lesson 5. [The oil business was growing, just in time to welcome a new invention: the automobile!]
- Ask the students what they remember about the working conditions for oil workers about 100 years ago, like those at Spindletop.
- Tell the students that in today's book they will learn about what oil workers do today.
- In small groups, direct the students to read the text using the following procedure:
  - The student whose birthday is next starts reading one page.
  - After reading the page, the student to the reader's left tells the group what the page was about in their own words.
  - The student who just summarized the page reads the next page.
- After all the pages have been read and summarized, tell the group to work together to complete Activity Page 6.1.

Check for Understanding

Ask students to choose whether they would prefer to be an oil worker in the past or present and why.

Challenge

Ask the students to use text-based evidence to explain why oil workers—past and present—are similar and different.

Support

Read the text with the students in a small homogenous group setting.

EMERGENT BILINGUAL STUDENTS

Writing
Reading for Information

Beginning
Have students read aloud the questions on Activity Page 6.1 to you, monitoring their own oral language production and self-correcting as needed.

Intermediate
Allow the students to read aloud and complete Activity Page 6.1 with a partner. Monitor partner reading for appropriate self-corrections..

Advanced/Advanced High
Invite the students to orally rehearse responses before completing Activity Page 6.1.

ELPS 1.A; ELPS 1.B
ELPS 3.E

TEKS 4.6.E Make connections to personal experiences, ideas in other texts, and society.

Lesson 6: Oil Today

Writing

60M

Primary Focus: Students will take notes from the reading for use in their argumentative essay body paragraphs. **TEKS 4.7.E; TEKS 4.2.C**

PLANNING FOR WRITING AND RESEARCH (20 MIN.)

- Remind students that they will write an argumentative essay based on the following prompt: *Texas benefits from a diversified energy industry that harnesses the potential of its variety of natural resources. Argue which of those factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources.*
- Tell students that an important step in the writing process is to make a plan for writing.
- Distribute Activity Page 6.2 and read the directions out loud.
- Model how to write ideas in a bulleted list using the introductory paragraph planned in Lesson 4.
- Remind students that their argument will rely on evidence from "Texas Energy: Variety is the Spice of Life" from Lesson 3.
- Reiterate that at this point in their writing plan, they may skip the "Explanation of Evidence" boxes in the body paragraphs.
- Give students 15 minutes to plan the reasons and evidence for their 2-3 body paragraphs before proceeding to their conclusion paragraphs.

STUDENT RESEARCH (40 MIN.)

- Show the students the available research materials. If possible, a library visit or classroom visit from a librarian is recommended. Explain how the materials are organized (by topic, by title, by type of media, etc.), and how to access any digital resources. Post any necessary login information in an easy to access location. Model how to access materials with multi-step directions. Support students in self-selecting text from the available resources.

TEKS 4.2.C Write legibly in cursive to complete assignments; **TEKS 4.7.E** Interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating.

- Display the KWL chart started earlier in the unit. Explain that the W stands for wonder. Tell the students that someone might wonder about where oil comes from. They would add that wonder in the form of a question to the left side of the T-chart. It may sound like, "Where does oil come from?"
- Ask students for questions they wonder about when they think of oil and energy to fill in the W column.
- Tell students that the questions in the Wonder column are the research questions that should guide them in their research.
- Tell students to research topics that they believe will support the claim they wrote in their introduction paragraph. Explain that, for example, if the claim was "Innovation is more important," then they might research innovations in the oil and nuclear energy industries.
- Remind students that even if the details they find today do not fit those questions exactly, they can still be written down. They may come in handy later.
- Give students 20 minutes to read independently to research questions they generated in the Wonder column of their KWL.
- Have students record their ideas on the Learned column of their KWL. Instruct students to record the source of their research in parenthesis next to their notes.

Activity Page 1.4

- Students are expected to write legibly in cursive.
- Tell students that they will consider how their research can strengthen their plan for writing. Remind students that the evidence they cite in their argumentative essays will come from Activity Page 1.4, "Texas Energy: Variety is the Spice of Life." However, their research on the topic will help them to better explain and defend their reasons. In this way, their research will look more like background information written in their own words.
- Direct students to the "Explanation of Evidence" portions of the body paragraphs of Activity Page 6.2.
- Read the second set of directions at the bottom of the page.
- Have students develop a plan for the "Explanation of Evidence" portions of their body paragraphs. If needed, give students time to conduct additional research.
- Tell students that they will continue to revise and add evidence to their writing plans over the next few days.
- Assist students with selecting resources as needed.

Support

When adding details to the evidence portion of their plans, tell the students to copy direct quotes of one sentence or less in length.

Check for Understanding

After taking notes, ask the students to indicate if they gathered information that supports their claim using a thumbs up, down, or in the middle.

End Lesson

EMERGENT BILINGUAL STUDENTS

Writing
Taking Notes

Beginning
Have the students sit with you while you take notes.

Intermediate
Allow students to work with a partner to assist with accessing research materials.

Advanced/Advanced High
Allow students to use a paper or digital dictionary to assist with unfamiliar vocabulary in research materials.

ELPS 3.E

Grade 4 | Unit 9

Pausing Point

PAUSING POINT FOR DIFFERENTIATION OF INSTRUCTION

Please use one day after Lesson 6 to address students' performance in this unit. Use your observations of student performance in class and completion of activity pages to informally evaluate student strengths and weaknesses and determine which remediation and/or enrichment opportunities will benefit particular students. In assigning these remediation and/or enrichment activities, you may choose to have students work individually, in small groups, or as a whole class.

REMEDIATION

For a detailed description of remediation strategies, which address lagging skills in Reading Comprehension, Fluency, Language, and Writing, refer to the Program Guide.

Content

If students demonstrate a need for remediation on any of the concepts from the unit, refer to the lessons covering that element. You may wish to read any excerpt again as a teacher Read-Aloud. In addition, you should focus on the suggestions labeled "Support" in the Teacher Guide materials for that lesson.

Defending a Claim

Review how to identify claims in texts students read in previous lessons. Ask students to highlight claims in one color, then to highlight the evidence that is used to defend or support the claim in another color.

Writing Plan

Review the characteristics of an argumentative essay that they learned in Lesson 3. Have students review what they have written so far on Activity Page 6.2. Then ask students, independently or in partners, to use "Texas Energy: Variety is the Spice of Life" to identify text evidence that supports their claim. Remind them to organize their evidence into at least two body paragraphs. Have students write a topic sentence for each body paragraph that describes a reason, or main idea, that supports their claim. Remind students that the evidence they use will develop their idea and strengthens their claim. Then, have students write their explanation of the text evidence in their own words on Activity Page 6.2.

PAST-TENSE VERBS, ADVERBS, AND PREPOSITIONS

- Students can work independently to complete the grammar practice activities focused on irregular past-tense verbs, adverbs that convey frequency and degree, and prepositions.

Activity Page PP.1

Grammar Practice

Directions: Fill in the blank with the past-tense form of the verb in parenthesis.

1. My family *went* to Palo Duro Canyon on vacation. (go)
2. We *drove* there from Dallas. (drive)
3. We *saw* a show at the amphitheater. (see)
4. My legs *shook* after our long hike. (shake)

Directions: Fill in the blanks with the correct adverbs from the word bank.

always	rarely	almost

5. I *almost* finished my homework, but I forgot to answer the last question.
6. I was very excited when my mom bought candy because she *rarely* buys it.
7. The sun *always* comes out again after a storm.

Directions: Revise each sentence for clarity by adding a prepositional phrase. Answers may vary, but could include:

8. There is a field of bluebonnets *next to the barn* .
9. We passed a large oil refinery *near Beaumont* .
10. Antonio went to the rodeo *in Houston* .

ENRICHMENT

Continuing Writing

Concentrate on developing research skills and identifying the parts of an argumentative essay. This is an opportunity to spend time with individual students, reading their work and providing targeted feedback.

You may wish to use the following listed tools to help students work on their writing:

- Research Guide
- Activity Page PP.2
- Parts of an Argumentative Essay
- Activity Page PP.3

Research Guide

- Tell students that they have been hired to write a guide for conducting research. Students can refer back to their activity pages to write their guide. Students should explain the process of conducting research, including how to identify questions for research, types of sources, and strategies for note-taking. Once students have finished writing, they can cut the pages out and staple or glue them together on the left side of each page to create a booklet.

Activity Page PP.2

Research Guide

Directions: You have been hired to write a guide for conducting research. In your guide, you should explain the process of conducting research including how to identify questions for research, types of sources, and strategies for note-taking. Once you have finished writing, you can cut the pages out and staple or glue them together on the left side of each page to create a booklet.

Design Your Cover.

	Types of Resources: ☐	**Strategies for Note-Taking:** ☐

	How to Identify Questions for Research

PARTS OF AN ARGUMENTATIVE ESSAY

- Students can work independently or in partners to determine which prompt leads to an argumentative essay. Students should explain why the prompt they chose leads to an argumentative essay before writing a response to the prompt.

Activity Page PP.3

Parts of an Argumentative Essay

Part A: Read the prompts below. Determine which prompt leads to an argumentative essay and explain your reasoning.

Prompt 1:	**Prompt 2:**
Describe your favorite recreational activity in which you participate. Include how often you do it, when and where you do it, and why you do it.	Which recreational activity has the most benefits: exercising or reading? Clearly state your answer and support it with evidence.

Part B: Write an argumentative essay in response to the prompt you answered for Part A.

LESSON

7

What Else?

PRIMARY FOCUS OF LESSON

Reading

Students will identify other sources of energy humans have developed. **TEKS 4.6.H**

Writing

Students will generate research questions and begin taking notes from sources to integrate into their essays. **TEKS 4.13.A; TEKS 4.2.C**

FORMATIVE ASSESSMENT

Check for Understanding

Writing Write and submit one of your own research questions. **TEKS 4.13.A; TEKS 4.2.C**

TEKS 4.6.H Synthesize information to create new understanding; **TEKS 4.13.A** Generate and clarify questions on a topic for formal and informal inquiry; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (30 min.)			
Introducing the Read-Aloud	Whole Group	5 min.	❏ Read-Aloud text "What Else?" ❏ KWL chart ❏ Image Cards 7A-1 and 7A-2
Read-Aloud	Whole Group	15 min.	
Discussing the Read-Aloud	Whole Group	10 min.	
Writing (60 min.)			
Writing Warm-up	Whole Group	10 min.	❏ KWL chart ❏ Activity Pages 3.3, 6.2, 7.1, and 7.2 ❏ student research materials
Writing Research Questions	Independent	20 min.	
Student Research	Independent	30 min.	

ADVANCE PREPARATION

Reading

- Prepare an enlarged copy of "What Else?" for display while reading.

Writing

- Prepare for students to revise their writing plans on Activity Page 6.2.
- Prepare research materials. If not still in place from Lesson 6, set up a display of research materials for students to use. There should be resources that address these questions, but can include additional resources for students as well.
    - Is this energy source available to all people in all locations?
    - Where are various energy sources located in Texas? Why there? How does this compare to other places?
    - Where are possible locations for expanded use of various energy sources?
    - What are past and present energy innovations for various energy sources?

Universal Access

Reading

- Provide a visual of the text, an enlarged display or individual copy, to follow during the reading.

Writing

- Provide access to audio versions of research materials and digital copies of the note-taking T-chart with voice-to-text software or browser extension.

CORE VOCABULARY

biogas, n. a mixture of gasses, created by the breakdown of organic substances, which can be used as a renewable energy source

fermentation, n. the chemical breakdown of a substance by microorganisms

fractured, v. broken

horizontally, adv. in a side-to-side position

impermeable, adj. not allowing liquid to pass through

innovative, adj. having the quality of something new created for a purpose

potential, n. the existence of a possibility

renew, v. to make new

vertically, adj. in an up-and-down position

Vocabulary Chart for "What Else?"

Vocabulary Type	**Tier 3 Unit-Specific Words**	**Tier 2 General Academic Words**
Core Vocabulary	impermeable fractured fermentation biogas	abundant vertically horizontally innovative potential
Multiple-Meaning		
Sayings and Phrases		

Start Lesson

Lesson 7: What Else?

Reading

30M

Primary Focus: Students will identify other sources of energy humans have developed. **TEKS 4.6.H**

Support

During the Read-Aloud, pause reading between pages and prompt students to restate what they have heard to check for comprehension.

Challenge

During the Read-Aloud, encourage students to generate higher order thinking questions with sentence starters such as:

What is the advantage or disadvantage of...?

What would happen if...?

What is an alternative to...?

INTRODUCING THE READ-ALOUD (5 MIN.)

- Review the previous lesson. Ask students to review some benefits of oil that they learned or discussed in Lessons 1–6. *(Oil offers advantages because there is a large supply in Texas. Oil can be easily transported to where people need fuel. Oil is easy to store and can be stored for long periods of time. Oil is more powerful than coal. Oil takes up much less space than coal, so businesses can use less oil to ship goods around the world. The Spindletop discovery created jobs and brought people to Texas.)*
- Tell students that today's reading tells what happened in the story of oil in the decades following the discovery at Spindletop. Ask the students to listen for new facts that they can add to the KWL chart as the text is being read.

TEKS 4.6.H Synthesize information to create new understanding.

READ ALOUD: "WHAT ELSE?" (15 MIN.)

Show Image 7A-1: Planes, Trains, and Automobiles at Bush Intercontinental Airport in Houston

Energy

As you may recall, in the previous lesson we learned that energy is very important to our lives. Cars, trucks, airplanes, trains, and buses need energy to run. Cell phones, computers, sound equipment, and televisions are some of the devices we use daily that run on energy. Energy also requires natural resources. Energy is used to light, heat, and cool homes, schools, or workplaces, and to manufacture all kinds of products, from toothpaste and clothing to sidewalks. Improvements in energy, especially because of fossil fuels in the 19th and 20th centuries, improved quality of life and health for millions of people around the world.

Fossil Fuels

We also learned that much of the energy we use comes from fossil fuels, such as oil, coal, and natural gas. Fossil fuels are called that because they were formed from carbon and hydrogen stored in the remains of living things that are estimated to have died millions of years ago. Those remains were buried in many deep layers of sediment that accumulated over time and turned into rock.

- Ask students the following comprehension questions:
  1. **Literal.** Pause after reading this paragraph. Say, "What are fossil fuels? *(Fossil fuels include petroleum (oil), coal, and natural gas. They are natural fuels created from carbon and hydrogen stored in the remains of living things that died long ago buried deep within the earth's sediment.)*
  2. **Inferential.** Ask, "Is there a high or low demand for fossil fuels?" *(high demand)*
- Read the next paragraph aloud.

Support

Pause after reading this paragraph. Read the first sentence again and explain the meaning of the word *limited*.

There's a limited amount of fossil fuels that are buried underground. Once they run out, some experts estimate we would have to wait millions of years for them to form again. That's why we say that fossil fuels are not renewable: they take a long time to renew naturally. That's why there is an interest in conserving and using resources wisely. Today we're going to talk about this, but first I want to tell you about other things happening today with fossil fuels.

- Ask students the following comprehension questions:
  1. **Literal.** Pause after reading this paragraph. Read the first sentence again and explain the meaning of the word *limited*. Say, " According to the text, what developments occurred due to the disadvantages of fuel?"*(development of renewable sources of energy)*
  2. **Literal.** Ask, "What does renewable mean?" *(Renewable means that the energy comes from a source that is naturally replenished when used.)*
- Read the next two paragraphs aloud.

The fossil fuels that still exist in the world are very difficult to find and remove from the earth. Much of the oil we have used so far came from abundant deposits, such as Spindletop. Do you remember what a deposit is? A deposit is a place where minerals or fossils exist naturally. Based on current technology, it is not known if there are many large deposits left. Most of the new oil discovered in the world is trapped in layers of almost impermeable rocks, which don't let the oil out. Until recently, it was impossible to extract the oil trapped in these rocks.

But this situation changed in the 20th century, when a new technology was invented: hydraulic fracturing (or fracking). Hydraulic fracturing involves breaking rocks with the force of water. First, a well is drilled vertically until the rocks containing the oil and natural gas are reached. Then, a hole is drilled horizontally along these rocks, and water is injected at high pressure, mixed with sand and chemicals. This is how the rocks are fractured to let the trapped oil out. Innovations and improvements in horizontal drilling technology and hydraulic fracturing later in the 21st century helped drive down oil prices and decrease environmental impacts. This made hydraulic fracturing more manageable. As you can see, innovations in technology are discovering previously unknown deposits, and innovations in technology are also helping to retrieve resources that could not be retrieved with previous technologies. Fracking is just one example of how innovations in technology are helping to retrieve resources that could not be retrieved with previous technologies. Innovators are also working on technologies that may help us discover previously unknown deposits.

- Ask students the following comprehension questions:

  1. **Literal.** What is hydraulic fracturing used for? *(It is used to extract the oil and natural gas that is trapped in rocks.)*

- Read the next two paragraphs aloud.

Hydraulic fracturing has made it possible to reach and remove major oil deposits discovered in recent years. One of the most important is the Wolfcamp deposit in West Texas because it contains enormous amounts of oil. Hydraulic fracturing is also used in geothermal energy production. Despite these new deposits that are found, oil is not renewable. As a result, scientists and businesses have made innovations, such as catalytic converters and industrial scrubbers, that reduce pollution from the burning of fossil fuels. These innovations along with the Clean Air Act has reduced six major pollutants by nearly 80% since the 1970's. America's innovations have made air much cleaner than in the past. New innovations are made all the time. Also, many have begun to develop renewable resources for the time when no more oil deposits are left. So . . . the time has come to tell you about some of the renewable sources of energy that are being developed!

Show Image 7A-2: Wind Turbines

Renewable Energy Sources

Renewable energy sources are naturally occurring, weather dependent supplies of energy. They are based on natural elements such as sunlight, wind, water, and the breakdown of organic waste (e.g., food scraps). Every one of these renewable energy sources still require a lot of resources, including minerals, metals, and fossil fuels, which can negatively impact the environment and still cause pollution in other ways. No energy source is perfect. They all have strengths and weaknesses. This is why scientists and other decision makers must take all of the available information and make the best decision for the problem they are trying to solve. They do this in a similar way to how you are researching for the essay you will write.

- Ask students the following comprehension questions:

1. **Inferential.** Based on your understanding of the text, what are some advantages of renewable energies? *(They don't cause as much air pollution and are naturally replenished.)*

- Read the next two paragraphs aloud.

Energy from the sun, or solar energy, is obtained by using special panels—called solar panels—that collect light and heat from the sun during the day. The panels use special minerals to convert light and heat into electricity. This type of energy is better suited for places or during seasons with a lot of sunshine.

Wind energy, or wind power, is generated by machines similar to giant windmills that rotate with the wind. These machines, which are made with metals, fiberglass, and plastics, are called wind turbines. The movement of the wind turbines converts energy from the wind into electricity. Wind energy works best in places that are very windy and have lots of open land.

Hydropower, or energy from water, is obtained in various ways. The most common way to harness energy from water is by installing a dam in a river and using the water pouring through the dam to spin turbines. One of the most innovative ways to harness water involves the movement of tides. Tides are movements of the sea that push and pull water toward or away from the coast. Hydropower is produced with turbines similar to those used for wind energy, except that they don't rotate with the wind. They move with the movement of the water. This energy is used to generate electricity.

Biofuels are another way of generating energy. They are produced by the breakdown of organic waste (animal manure, garden waste, food waste) in the process of **fermentation**. This process takes place in special plants, where **biogas** is used to produce energy.

- Ask students the following comprehension questions:

1. **Literal.** What are some examples of renewable energy sources, and how do they work? *(Solar—harnesses the power of the sun to charge batteries, wind—harnesses the movement of wind to power turbines which generate energy, hydropower—harnesses the power of moving water to turn large turbines which generate energy, biofuels—harness the power found in certain organic wastes when they break down and release biogas which can generate energy)*

Support

Explain to students that biogases are a flammable mixture of gasses formed when organic substances, like plants, break down or decompose. Since this process can occur naturally anytime organic substances decompose, this is considered a renewable energy source.

2. **Evaluative.** The title of the next section is "Challenges for Renewable Sources". What do you predict some of these challenges will be for renewable energy sources? *(Possible answers include: 1) Renewable energy is not ready to meet the large energy needs of the world, so scientists will need to continue to improve the technology to make it easier to use. 2) Not as many people have access to renewable energy or the cost is very expensive. New technology must be developed to make the cost less restrictive. 3) It will be a challenge for people to make the change to using renewable sources because they will need to spend lots of money converting to nonrenewable sources. 4) Renewable sources require a lot of land to generate the same amount of power. 5) Storing energy can be challenging. 6) Renewable energy sources are not as reliable. 7) The potential for renewables are limited and debatable for the foreseeable future.)*

- Read the next two paragraphs aloud.

Challenges for Renewable Sources

All these energy sources have great potential, but for now they can't replace fossil fuels. Why? First, most of them are more expensive than fossil energy sources. Most renewable energy sources currently require more taxpayer funded government subsidies, or money discounts, than fossil fuels, to support their use. Second, some of these energy sources can only be used in specific places. Third, many produce energy at times when energy isn't needed and don't produce energy at times when it is needed, requiring new energy storage technology. Fourth, as with all energy sources, they require raw materials, such as rare earth minerals, that aren't renewable or aren't widely available, limiting their potential to scale. Also, American laws help to ensure we only use materials that don't harm people. Many foreign workers are forced to mine these minerals, often in unsafe conditions. Finally, most of these sources are not as powerful as fossil fuels and nuclear power.

However, many scientists and businesses are working on new technology to produce renewable energy that is cheaper and that can be more reliably used.

- Ask students the following comprehension questions:

3. **Evaluative.** What claim does the writer make in this paragraph? *(Renewable energies can't yet replace fossil fuels because they're more expensive and harder to obtain, but scientists and businesses are working hard to solve these problems.)*

EMERGENT BILINGUAL STUDENTS

Speaking and Listening
Finding Cause/ Exchanging Information and Ideas

Beginning
Have students pull out only key words from the text to include in the KWL chart.

Intermediate
When adding a wonder to the KWL chart and referring to the text, prompt the students to reread directly from the text instead of paraphrasing.

Advanced/Advanced High
When the students are contributing to the KWL chart, provide teacher support for paraphrasing by restating the student's idea. "So, what you are saying is...?" (Restate the student's idea, modeling effective paraphrasing.)

ELPS 2.E; ELPS 3.F

DISCUSSING THE READ-ALOUD (10 MIN.)

- Ask the students to consider what questions this new knowledge brings up. For example, the text says, "Renewable energy sources are naturally replenished, weather dependent, supplies of energy. They are based on natural elements such as sunlight, wind, water, and the breakdown of organic waste (e.g., food scraps)." In a Think-Aloud explanation, state that this makes you wonder. Tell students, "A question that comes to mind is can we create enough to meet our demands?"
- Ask the students what questions come to their minds.
- Add the students' suggestions to the W column of the chart. Allow time for students to skim the reading and have some thinking time before responding.

Check for Understanding

Tell students to turn and talk with a neighbor to share one research question that was generated from a W item on the class KWL chart.

Lesson 7: What Else?

Writing

60M

Primary Focus: Students will generate research questions and begin taking notes from sources to integrate into their essays. **TEKS 4.13.A; TEKS 4.2.C**

WRITING WARM-UP: TEXT EVIDENCE IN THE RUBRIC (10 MIN.)

Activity Page 3.3 and 6.2

- Have students take out Activity Page 3.3 and have them get out a yellow highlighter, marker, or crayon to use.
- Tell students that this rubric helps give guidelines for writing. Today students will look at this rubric to see how text evidence will support their writing piece.
- Have students read through the rubric and highlight areas that show how the use of text evidence impacts the writing.
- Using key words from the rubric, create a class list of requirements to reference when searching for text evidence later in the lesson.

TEKS 4.13.A Generate and clarify questions on a topic for formal and informal inquiry; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

Examples:

- Use multiple sources
- Make sure the text evidence is clear
- Clearly connect the text-evidence to your argument

- Have students revisit their writing plans in Activity Page 6.2. Direct them to review the evidence they selected for both body paragraphs. Ask students to compare what they have planned against the guidelines for text evidence in the rubric.
- Give students time to reflect on their evidence and revise their plans if needed.

WRITING RESEARCH QUESTIONS (20 MIN.)

- Remind students that during the last activity, they added to the W column of the KWL chart. Explain that during this activity, they will write their own questions to guide their research.
- Remind students that the evidence they cite in their argumentative essays will come from "Texas Energy: Variety is the Spice of Life." However, their research on the topic will help them to better explain and defend their reasons.
- Model how to use questions generated in the Wonder column of their KWL to create research questions. Say: *One question I wrote in the Wonder column is "Can we create enough energy from renewable sources to meet our demands?" If my claim for the argumentative essay is that innovation is most important to Texas' diverse energy industry, then I might write the following research questions:*
  - *What innovations have made renewable energy more abundant in Texas in the past?*
  - *What innovations are solving today's challenges with a reliable renewable energy supply?*
  - *What innovations are needed to meet our energy demands?*
  - *How have innovations solved energy availability challenges?*
- Ask partners to brainstorm possible research questions using the alternate claim. As students brainstorm questions, they can record them on Activity Page 7.1. *(If my claim is that the variety of energy sources available in Texas is most important to a diverse energy industry, then I might ask: Where are renewable energy sources located in Texas? Why there? How does Texas*

EMERGENT BILINGUAL STUDENTS

Writing
Using Research Questions

Beginning
Tell the students to use illustrated research materials as their first choice for information. Direct students to add information to their notes based on the images and their captions.

Intermediate
Pair students with a peer and ask them to generate research questions and take notes from research materials together.

Advanced/Advanced High
Tell the students to share their questions before beginning research. Check the questions to ensure they will not result in a yes/no answer or are not opinion based.

ELPS 1.H; ELPS 3.E

compare to other states or countries? Where are possible locations for expanded use of renewable energy sources?)

- Explain that students may also have questions about the claim, reasons, or evidence they began to outline in Activity Page 6.2.
- Some students may want to adjust their claim based on their new knowledge. Reassure students that they can still change their claim.
- Once there are several options for students to choose from on Activity Page 7.1, have them choose two questions that they would like to focus on for their research time today. They need to write these two questions on their research organizer, Activity Page 7.2.
- There is space for a third research question if there is extra time available.

Activity Page 7.1 and 7.2

Check for Understanding

Ask students to indicate if the questions they generated support their claim with a thumbs up, down, or in the middle.

STUDENT RESEARCH (40 MIN.)

- Direct students to browse the research materials purposefully, selecting resources that are likely to address the research questions they have selected from the KWL chart and Activity Page 7.1. Support students in self-selecting text from the available resources.
- After choosing their selected research materials, tell the students to read independently to collect information and take notes on Activity Page 7.2. Remind students to return to Activity Page 7.1 to record questions for further research during and after reading their selected research materials.
- Students are expected to write legibly in cursive to complete assignments.
- In the last ten minutes, have students to revisit their writing plans in Activity 6.2. Ask students to add or revise their plans to further develop their ideas based on the research they gathered in today's lesson.

Challenge

After working for fifteen to twenty minutes browsing research materials and gathering notes, tell the students to look back at their research questions. Ask the students to revise their questions to better match the information they are finding in the materials.

Support

Individually or in a small group, model changing a student's notes into sentences. Then, observe the student convert a note into a sentence before allowing the student to continue independently.

Check for Understanding

Write and submit one research question. Students are expected to write legibly in cursive.

End Lesson

LESSON

8

Nuclear Energy

PRIMARY FOCUS OF LESSON

Reading

Students will recognize characteristics of an informational text, including a central idea and supporting evidence, in "Nuclear Energy." **TEKS 4.9.D.i**

Writing

Students will develop drafts into a focused, structured, and coherent piece of writing by identifying the claim, evidence, and transition words. **TEKS 4.11.B.i; TEKS 4.2.C**

FORMATIVE ASSESSMENT

Activity Page 8.2

Transition Words

Students will score a paragraph about nuclear energy by identifying the claim, evidence, and transition words. **TEKS 4.11.B.i; TEKS 4.2.C**

TEKS 4.9.D.i Recognize characteristics and structures of informational text, including the central idea with supporting evidence; **TEKS 4.11.B.i** Develop drafts into a focused, structured, and coherent piece of writing by organizing with purposeful structure, including an introduction, transitions, and a conclusion; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (55 min.)			
Preview Key Vocabulary	Whole Group	5 min.	❏ "Nuclear Energy" ❏ Activity Page 8.1 ❏ chart paper ❏ sticky notes ❏ Image Cards 8A-1–8A-5
Close Reading	Independent/ Whole Group	30 min.	
Central Idea and Supporting Evidence	Partners	20 min.	
Writing (35 min.)			
Writing with Transition Words	Whole Group	15 min.	❏ enlarged version of the T-chart found on Activity Page 8.1, copied onto chart paper or reproduced in a digital display ❏ Activity Pages 8.2, 8.3, 3.3 ❏ chart paper ❏ markers
Arranging a Sequence	Partners	10 min.	
Scoring a Writing Sample	Independent	15 min.	

ADVANCE PREPARATION

Reading

- Prepare and display a piece of chart paper or digital whiteboard with a model T-chart, as seen on Activity Page 8.1.
- Prepare for students to be divided into partners to complete Activity Page 8.1.
- Post sentence starters for emergent bilingual students to use when contributing to the whole class note-taking demonstration.

Writing

- Prepare for students to work with a partner to complete Activity Page 8.1 and the scoring of the sample piece, Activity Page 8.3, using the rubric on Activity Page 3.3.
- Prepare to distribute the sample writing piece, Activity Page 8.3, for each student to score.
- Prepare to distribute a copy of the rubric, Activity Page 3.3, to each student.
- Prepare to distribute sentence frames to emergent bilingual students as they begin group work.

Universal Access

Reading

- Provide access to copies of the T-chart model to assist with tracking and copying, as necessary.

Writing

- Provide access to a word processor to use with a digital version of Activity Page 8.1 and Activity Page 8.2.

CORE VOCABULARY

admiral, n. a commissioned officer of very high rank in the US Navy or Coast Guard

atom, n. the basic unit of a chemical element

chemical element, n. a substance that cannot be broken down into simpler substances

generate, v. to produce or make

nuclear energy, n. energy released during nuclear fission or fusion to generate electricity

nuclear fission, n. when atoms are split apart and release energy

nuclear fusion, n. when two atomic nuclei join to form a single nucleus and give off energy

nuclear reactor, n. a device used to generate power through nuclear fission

power plant, n. a place where electrical power is made and distributed

radiation, n. the release of energy as electromagnetic waves or particles

radioactive, adj. material that releases particles smaller than an atom

turbine, n. a machine with a wheel or rotor that spins to produce power

transition, n. a word or phrase used to link sentences or paragraphs together to make the piece of writing coherent

uranium, n. a radioactive metal

Vocabulary Chart for "Nuclear Energy"

Vocabulary Type	**Tier 3 Unit-Specific Words**	**Tier 2 General Academic Words**
Core Vocabulary	nuclear energy atom chemical element nuclear fission nuclear fusion uranium radiation radioactive power plant turbine nuclear reactor	admiral generate transition
Multiple-Meaning		
Sayings and Phrases		

Lesson 8: Nuclear Energy

Reading

55M

Primary Focus: Students will recognize characteristics of an informational text, including a central idea and supporting evidence, in "Nuclear Energy." **TEKS 4.9.D.i**

PREVIEW THE VOCABULARY (5 MIN.)

- Tell students that they will read an informational text titled "Nuclear Energy." Explain that they will discover and learn a lot of new vocabulary words and terms within this text.
- Distribute a sticky note to each student.
- Preview the vocabulary by reading through the list of words previously written on a large chart paper.
- Direct students to draw or write their ideas or connections to the words on the sticky notes. Then, tell students to place their sticky notes on the chart paper.
- After all students have placed their sticky notes on the chart paper, discuss a few of their ideas and drawings. Draw connections between the students' ideas and drawings.

CLOSE READING (30 MIN.)

- Tell the students that they will read about a renewable energy source called nuclear energy and its impacts on Texas and the nation.
- Remind students that they have previously learned about other renewable energy resources from the text, "What Else?" Direct students to turn to a partner to name a renewable resource and to describe some of its advantages and disadvantages.
    - After students have had time to discuss, ask for a few students to share their responses.
- Explain to students that the text, "Nuclear Energy," is broken into six main sections, each with a different central idea, or main focus. Explain that each

EMERGENT BILINGUAL STUDENTS

Reading
Central Idea

Beginning
Discuss the images in the Reader with the students prior to reading.

Intermediate
Preview the text and the vocabulary words in bold. Discuss these words with the students. Encourage each student to use the word in their own sentence.

Advanced/Advanced High
Allow the students to read with a partner and to discuss the evidence. Provide sentence stems for students to discuss, such as "I think _____ is supporting evidence because . . ." or "_____ does not support the central idea because . . ."

ELPS 3.E; ELPS 4.D

TEKS 4.9.D.i Recognize characteristics and structures of informational text, including the central idea with supporting evidence.

section's central idea helps the reader to understand the passage as a whole.

- Tell students that in order to determine each section's central idea, they need to examine important details. Then, tell students that they will ask themselves, "Based on these details, what is the main focus of this section?"
- Direct students to do a first read of the text "Nuclear Energy" independently. Tell students to highlight or underline important details as they do their first read.
    - Monitor and facilitate as students read through the passage independently.
- After students have finished their reading, display and discuss the questions related to Image Cards 8A-1–8A-5.. Remind students that evidence can be gathered from images in informational text as well.

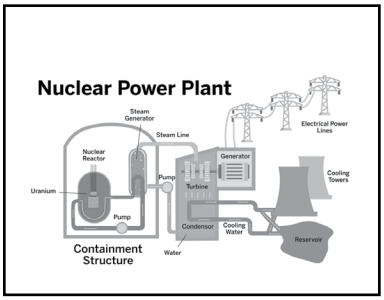


Image Card 8A-1: Nuclear Reactor Diagram

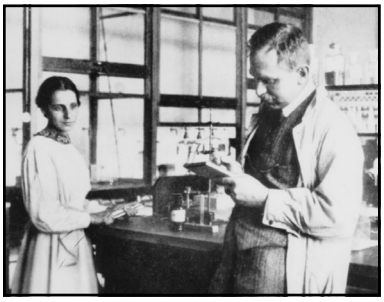


Image Card 8A-2: Manhattan Project

Image Card 8A-3: Admiral Hyman G. Rickover

1. Inferential: Based on this diagram, how do nuclear reactors work? *(Uranium atoms are split in a nuclear chain reaction within structures known as nuclear reactors. This releases energy that is used to heat water into steam. The steam spins the turbines to generate electricity, stored in the generator. Then, the electricity is sent out to homes.*

2. Literal: What was the significance of the Manhattan Project, shown here? *(The group of men and women that were a part of the Manhattan Project successfully created the world's first nuclear reactor. This was significant because it led to other advancements. For example, because of the Manhattan Project, the Texas Research Foundation was able to develop fertilizers using nuclear energy.)*

3. Literal: What was Admiral Hyman G. Rickover's impact on the future? *(He was able to develop ships that could run on nuclear energy. This impacted the future of vessels, like submarines, that did not need to refuel often.*

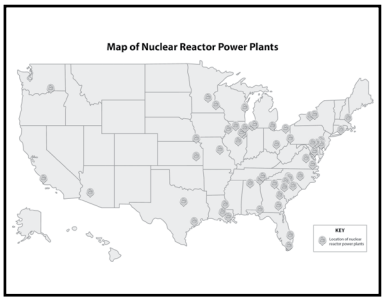


Image Card 8A-4: Map of Nuclear Reactor Power Plants

Image Card 8A-5: Comanche Peak Nuclear Power Plant in Glen Rose, TX

This, ultimately, would save money over the years.)

4. Literal: Nuclear power plants are located throughout the United States, as shown by the map. Why is safety a major concern for nuclear power plants all over the United States? *(The waste products formed during nuclear fission are dangerous to humans and the environment if not handled safely. It is important for power plants to have safety protocols to ensure employees and others remain safe from radioactive wastes.)*

5. Inferential: Based on this image of the nuclear power plant in Glen Rose, TX, what information can you infer about nuclear power plants? *(Nuclear power plants can hold a lot of energy. This means they may be able to provide electricity for a large mass of people, especially in Texas, a highly populated state. The image also makes it seem that the power plant is made to withstand natural disasters, such as tornadoes.)*

6. Evaluative. What information from the text supports the idea that there may be some benefits to using nuclear over renewable energy sources? *("Unlike renewables like wind and solar, nuclear plants produce power day and night, ensuring there is always electricity when it is needed.")*

CENTRAL IDEA AND SUPPORTING EVIDENCE (20 MIN.)

Activity Pages 8.1

- After students have had time to read through and highlight the evidence, draw their attention to the layout of Activity Page 8.1. Explain that this is called a T-chart and that T-charts have a column on the left for the central idea and a column on the right for details. It is called a T-chart because the lines make a T at the top. Explain to students that a central idea can be determined by identifying important details in the text.
- Draw the students' attention to the words already printed in the central idea column. Point to them on the enlarged copy of Activity Page 8.1 being displayed. Tell the students that some of the work has already been done for them: the central ideas are filled in. They will determine which evidence

supports each of the central ideas.

- Read aloud the heading "How Does Nuclear Energy Work?"
- Ask the students to look for the central idea on Activity Page 8.1 T-chart Notes, "Nuclear Energy." When they find it, direct students to point to it on their paper and give a thumbs up.
- Read aloud the first paragraph under the heading "How Does Nuclear Energy Work?"
- Demonstrate how to find the supporting evidence in the text. Say, "The next thing I would do when taking notes is ask myself, 'What details about the central idea do I see here?' The central idea is how nuclear energy works, so I am looking for details about nuclear energy."
    - Model rereading the page to yourself aloud. Say, "I think I see a detail here, where it says 'Atoms last forever but sometimes undergo changes to the nucleus that transform them into different elements. These changes often release enormous amounts of energy.' Would you agree that this detail matches my central idea? Give me a thumbs up or thumbs down. You can give me a thumb in the middle if you aren't sure."
- Write "atoms undergo changes that release energy" in the details column of the chart paper prepared with a model T-chart. Ask the students to add this detail to their own T-charts on Activity Page 8.1 as well.
- Read the second paragraph under the heading "How Nuclear Energy Works."
- Ask the students what supporting evidence they previously found within this paragraph. (Correct responses should include details about nuclear fusion).
    - Direct students to write these details in their T-charts.
- Put students into pairs to complete Activity Page 8.1. Direct student partners to discuss each section's supporting evidence. Tell students to write down the supporting evidence they both agree upon in the T-chart on Activity Page 8.1.
    - Remind students to ask themselves, "What details support the main focus of this section?

Check for Understanding

Visit each small group as they work and ask students to share the key ideas and details they have identified and written on their charts. Ask each group to explain why they chose those details.

Support

Pull a small group of students who need additional support determining what supporting evidence to highlight or underline. Read through a section and provide students with details that support the central idea and details that do not support the central idea. Ask students to discuss whether it is supporting evidence or not and why.

Challenge

Ask students to determine the central idea of the whole text based on their six central ideas. Tell students to write the text's overall central idea down on Activity Page 8.1.

Activity Page 8.2

Lesson 8: Nuclear Energy

Writing

35M

Primary Focus: Students will develop drafts into a focused, structured, and coherent piece of writing by identifying the claim, evidence, and transition words. **TEKS 4.11.B.i; TEKS 4.2.C**

WRITING WITH TRANSITION WORDS (15 MIN.)

- Tell students that today's text was about nuclear energy, its advantages and disadvantages, and its impact on Texas and the nation. One way to retell important details from an informational text in a sequential format is to use transition words. These words will be useful when writing their argumentative essays. Explain that they are going to practice using transition words by describing nuclear energy and its impact.
- Ask students to turn to Activity Page 8.2. Tell students that they will write a draft of an informational text describing the steps needed to turn the sun's energy into energy people can use. They will use transition words to organize their writing.
- Direct the students' attention to the word bank at the top of the page. Tell students that these are some common transition words that are used to tell the order in which something happens. *Sequence* is another word for order.

Sequence Transition Words			
first	third	then	last
second	next	finally	afterward

- Ask the students which word to use for the first piece of information in the sequence. Direct students to point to that word on their activity page in the word bank.
- Ask students, "What is the first step to share about how nuclear energy works?" First, tell students to turn to a neighbor and share an answer. Then,

Support

Before beginning Activity Page 8.2, direct the students to label the transition words in the word bank with "beginning," "middle," and "end" as applicable.

TEKS 4.11.B.i Develop drafts into a focused, structured, and coherent piece of writing by organizing with purposeful structure, including an introduction, transitions, and a conclusion; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

ask students to share with the class. *(Correct answers should include a reference to either nuclear fusion, when nuclei of atoms combine, or nuclear fission, when a nucleus of an atom divides).*

- Using a Think-Aloud, refer to the supporting evidence notes on Activity Page 8.1 and tell the students "I see that there are two ways nuclear energy works. I am going to explain nuclear fusion. I see the process begins when the nuclei of two atoms combine. I can record that on my paper using the transition word *first*."
- Display the enlarged Activity Page 8.2. Tell students that there are two examples of how nuclear energy works. Write "Nuclear Fusion" on the enlarged Activity Page 8.2. Then, write the sentence "First, the nuclei of two atoms combine."
- Ask the students, "What transition words might we use for the middle of our sequence?" *(Correct responses include second, third, next, and then.)*
- Then ask the students what transition words might be used for the last step. *(Correct responses include finally, last, and afterward.)*

ARRANGING A SEQUENCE (10 MIN.)

- Direct students to complete Part 1 of Activity Page 8.2. Students are expected to write legibly in cursive.
- When finished, direct the students to find a nearby partner and complete Part 2 of Activity Page 8.2. Remind the students to use the transition words and their new knowledge from "Nuclear Energy" to complete the exercise. When finished, ask the students to check their partner's work and then hand in the completed page to you or a central location in the classroom.

Check for Understanding

Ask students to explain how transition words help the reader to understand how nuclear energy works.

SCORING A WRITING SAMPLE (10 MIN.)

- Explain to students that they have focused on determining a claim, supporting evidence, and transition words.
- To prepare for their argumentative essay, they will practice scoring a sample writing about nuclear energy, Activity Page 8.3.

EMERGENT BILINGUAL STUDENTS

Writing
Transitions

Beginning
Direct students to use the diagram of the nuclear reactor, Image Card 8A-1, in the Reader during the partner sequencing activity. Ask the student's partner to point to the illustrations that match the sequence sentences before the exchange.

Intermediate
Provide sentence frames for group work.

Advanced/Advanced High
Distinguish the transition word bank word *then* from the word *than*. Explain that these words look and sound very similar but have different meanings and uses.

ELPS 1.E; ELPS 2.E

Activity Pages 8.3 and 3.3

- Tell students that the prompt for this piece is "How are innovations in nuclear energy benefiting the American economy?"
- Display Activity Page 3.3 and provide each student with a copy.
- Direct students' attention to "Organization is effective." Explain to students that they will be scoring the sample writing piece within this category. They will look to see if the writing structure follows a logical sequence and incorporates transition words appropriately.
- Direct students' attention to "Evidence is specific, well chosen, and relevant." Explain to students that they will be scoring the sample writing piece within this category as well. They will be looking for a strong claim, with relevant evidence.
- Allow students time to read through the sample writing piece with a partner. Direct students to discuss the piece and to determine a score.
- After student partners have completed their scoring, ask for a few students to share their scores.
    - Discuss the different scores and determine an overall score for the piece within these two categories.

End Lesson

LESSON

9

Solar, Wind, and Batteries Part 1

PRIMARY FOCUS OF LESSON

Reading

Students will evaluate details about renewable energy. **TEKS 4.6.G**

Students will compare and contrast the benefits and drawbacks of different forms of energy. **TEKS 4.7.B; TEKS 4.9.D.iii**

Writing

Students will generate research questions and begin taking notes from sources to integrate into their essays. **TEKS 4.13.C; TEKS 4.2.C**

Students will revise their writing plan for an argumentative essay. **TEKS 4.11.B.i**

FORMATIVE ASSESSMENT

Check for Understanding Students will summarize solar and wind power and how they use batteries in a Write-Pair-Share. **TEKS 4.9.D.iii**

TEKS 4.7.B Write responses that demonstrate understanding of texts, including comparing and contrasting ideas across a variety of sources; **TEKS 4.6.G** Evaluate details read to determine key ideas; **TEKS 4.9.D.iii** Recognize characteristics and structures of informational text, including organizational patterns such as compare and contrast; **TEKS 4.13.C** Identify and gather relevant information from a variety of sources; **TEKS 4.11.B.i** Develop drafts into a focused, structured, and coherent piece of writing by organizing with purposeful structure, including an introduction, transitions, and a conclusion; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (40 min.)			
Close Reading	Whole Group/ Partners	20 min.	❏ "Solar, Wind, and Batteries Part 1: Renewable Energy Explained" ❏ Activity Pages 9.1, 9.2
Comparing and Contrasting	Whole Group/ Partners	20 min.	
Writing (50 min.)			
Researching Renewable Energy	Independent	30 min.	❏ Activity Pages 3.3, 6.2, 9.3, 9.4
Revising the Writing Plan	Independent	20 min.	

ADVANCE PREPARATION

Reading

- Prepare a large chart of Activity Page 9.2.

Writing

- Prepare for students to revise their writing plans on Activity Page 6.2.
- Prepare research materials. If not still in place from Lesson 7, set up a display of research materials for students to use. There should be resources that address these questions, but can include additional resources for students as well.
    - Where are various energy sources located in Texas? Why there? How does this compare to other places?
    - Where are possible locations for expanded use of various energy sources?
    - What are past and present energy innovations for various energy sources?
    - What questions do I have about my claims, reasons, and evidence?
- Prepare to distribute the students' introduction paragraph draft from Lesson 4.

Universal Access

Writing

- Provide access to audio versions of research materials and digital copies of the note-taking T-chart with voice-to-text software or browser extension.

CORE VOCABULARY

batteries, n. devices that change chemical energy into electric energy

generator, n. a machine that changes energy into electricity

intermittent, adj. sporadic; irregular

mining, v. extracting materials from Earth

photovoltaic cell, n. a device that changes sunlight into electricity

reliable, adj. consistent; dependable

renewable energy, n. energy source that does not run out

replenished, v. refilled; reloaded

silicon, n. a chemical element used to make electronic circuits

solar farms, n. areas with a lot of solar panels to generate electricity

solar panels, n. devices that absorb the sun's rays as an energy source

space-consuming, adj. takes up a lot of space

wind turbines, n. devices with blades that turn wind energy into electricity

Vocabulary Chart for "Solar, Wind, and Batteries Part 1: Renewable Energy Explained"

Vocabulary Type	Tier 3 Unit-Specific Words	Tier 2 General Academic Words
Core Vocabulary	renewable energy solar panels mining photovoltaic cell silicon solar farms wind turbines generator batteries	replenished intermittent reliable space-consuming
Multiple-Meaning		
Sayings and Phrases		

Start Lesson

Lesson 9: Solar, Wind, and Batteries Part 1

Reading

40M

Primary Focus: Students will evaluate details about renewable energy. **TEKS 4.6.G**

Primary Focus: Students will compare and contrast the benefits and drawbacks of different forms of energy. **TEKS 4.7.B; TEKS 4.9.D.iii**

Activity Page 9.1

Support

While the students are working, the teacher should help individual students or pull together a small group of students who need similar support to complete this activity page.

Activity Page 9.2

CLOSE READING (20 MIN.)

- Explain to students that they will use the text, "Solar, Wind, and Batteries Part 1: Renewable Energy Explained" to determine key ideas about solar energy, wind energy, and batteries. Remind students that they can use the text and images to find key ideas.
- Direct students to read "Solar, Wind, and Batteries Part 1: Renewable Energy Explained" individually.
- Allow five or six minutes for students to read.
- As they read, ask students to take notes on Activity Page 9.1.
- After completing the activity page, tell students to turn to a neighbor and compare notes. Explain that each person's notes will be slightly different, but should contain most of the same information. If the students notice a big difference between their notes and their partner's, discuss why they chose to include that information.

Check for Understanding

Students will summarize solar and wind power and how they use batteries in a Write-Pair-Share.

TEKS 4.7.B Write responses that demonstrate understanding of texts, including comparing and contrasting ideas across a variety of sources; **TEKS 4.6.G** Evaluate details read to determine key ideas; **TEKS 4.9.D.iii** Recognize characteristics and structures of informational text, including organizational patterns such as compare and contrast.

COMPARING AND CONTRASTING (20 MIN.)

- Tell students that they will be filling in a chart, Activity Page 9.2, that shows the pros and cons of solar and wind energy using key ideas from Activity Page 9.1.
- Tell students that you will model how to find the pros, or benefits, of solar energy.
- Think-Aloud: I am going to use the informational text's headings to help me find information about the benefits of solar energy. I noticed the heading, "What are the Strengths and Weaknesses of Solar Power?" This section will describe some pros and cons of solar energy. Within this section, I noticed the text said solar energy is a "renewable resource that will not expire or run out." This is a key idea that I will add to our chart on Activity Page 9.2.
    - Add this to a class chart on Activity Page 9.2. Direct students to add it to their copy of Activity Page 9.2 as well.
- Think-Pair-Share: Ask students to look through the text or Activity Page 9.1 to find another pro for solar energy. Direct students to write their key ideas under the pro column for solar energy.
    - Ask for a few students to share their ideas and add it to the class chart.
- Have students identify the cons, or limitations, of Solar Energy. Ask for a few students to share their ideas and add it to the class chart.
- Put students into partners to complete Activity Page 9.2, comparing and contrasting the different types of renewable energy. Remind students that they can use the key ideas they found in Activity Page 9.1 to help them find pros and cons.

Check for Understanding

Ask students to orally explain the pros and cons of a type of energy using supporting evidence.

Support

Model how to identify information for the graphic organizer during the Read-Aloud, providing more support during the solar power sections and gradually giving students more autonomy to complete the remaining sections.

Challenge

After completing Activity Page 9.2, ask the students to use the classroom research materials to find additional pros and cons of at least two of the four types of energy sources discussed in the article.

EMERGENT BILINGUAL STUDENTS

Reading
Compare and Contrast

Beginning
Create a bank of correct responses for Activity Page 9.2. Have students insert answers into the pros and cons for each type of energy in a cooperative group.

Intermediate
Pair students to write the paragraph numbers where the correct response can be found next to each box on Activity Page 9.2.

Advanced/Advanced High
Pair the student with a partner and tell them to take turns rereading the text, as needed.

ELPS 3.E; ELPS 3.F

TEKS 4.7.B Write responses that demonstrate understanding of texts, including comparing and contrasting ideas across a variety of sources; **TEKS 4.6.G** Evaluate details read to determine key ideas; **TEKS 4.9.D.iii** Recognize characteristics and structures of informational text, including organizational patterns such as compare and contrast.

Support

In small groups, model how to read information and to take notes using key words and details. Then, tell students to select a piece of text evidence. Discuss the evidence with students and determine the key words and details to include on their graphic organizers.

Challenge

After taking notes, ask students to create follow up questions to their findings. Ask students if there is anything else they need to research. The students may choose more specific questions or add "Why?" to their original questions.

Activity Page 9.3, 9.4, and 6.2

Lesson 9: Solar, Wind, and Batteries Part 1

Writing

50M

Primary Focus: Students will generate research questions and begin taking notes from sources to integrate into their essays. **TEKS 4.13.A; TEKS 4.2.C**

Primary Focus: Students will revise their writing plan for an argumentative essay. **TEKS 4.11.B.i**

RESEARCHING RENEWABLE ENERGY (30 MIN.)

- Remind students that their purpose for research is to prepare to answer the question, "Argue which of those factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources."
- Remind students that they will use their research to write a well-organized argumentative essay that supports their claim using specific evidence from the text, "Texas Energy: Variety is the Spice of Life."
- Explain to students that they will now conduct additional research about energy sources.
- Ask students to think about what else they would like to know about wind and solar energy sources. Prompt students to ask themselves, "What questions will help to better compare these wind and solar energy sources? What keywords are associated with my claim? What do I still need to know to support my claims?"
- Have students brainstorm several questions that might be helpful. As students come up with ideas, prompt them to consider these ideas if they have not:
    - Where are various energy sources located in Texas? Why there? How does this compare to other places?
    - Where are possible locations for expanded use of various energy sources?
    - What are past and present energy innovations for various energy sources?
    - What questions do I have about my claim, reasons, or evidence?
- Direct students to write their questions on Activity Page 9.3.
- Once there are several options for students to choose from on Activity

TEKS 4.13.C Identify and gather relevant information from a variety of sources; **TEKS 4.11.B.i** Develop drafts into a focused, structured, and coherent piece of writing by organizing with purposeful structure, including an introduction, transitions, and a conclusion; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

Page 9.3, have them choose two that they would like to focus on for their research time today. They need to write these two questions on their research organizer, Activity Page 9.4.

- There is space for a third research question if there is extra time available.
- Direct students to browse the research materials, purposefully selecting resources that are likely to address the research questions they have selected on Activity Page 9.3. Support students in self-selecting text from the available resources.
- After choosing their selected research materials, tell the students to read independently to collect information and take notes on Activity Page 9.4.
- Students are expected to write legibly in cursive to complete assignments.

REVISING THE WRITING PLAN (20 MIN.)

- Remind students that the evidence they cite in their argumentative essays will come from "Texas Energy: Variety is the Spice of Life." However, their research on the topic will help them to better explain and defend their reasons.
- Ask students to revisit their writing plan in Activity 6.2. Encourage students to revise their plans based on the research they gathered in today's lesson.
- Circulate the classroom for individual writing conferences as students independently revise their writing plans on Activity Page 6.2. Guide students in using the Argumentative/Opinion/Informational Writing Rubric on Activity Page 3.3 to identify areas of strength and areas that need improvement in their writing plans.

End Lesson

EMERGENT BILINGUAL STUDENTS

Writing
Research

Beginning
Have the students read their research notes one at a time. Model the drafting process by restating the note as a sentence for the student's essay, while the student jots it down. After modeling two sentences, switch roles with the student.

Intermediate
Read the student's research notes back to the student. After each note is read, ask the student if they would like to use it in their essay. If so, ask what claim this would support. Highlight the notes according to the claim it represents or supports.

Advanced/Advanced High
Tell the students to color-code their notes by claim before adding the notes to the essay.

ELPS 3.E

Activity Page 3.3

LESSON

10 Solar, Wind, and Batteries Part 2

PRIMARY FOCUS OF LESSON

Reading

Students will identify the central claim of the argumentative text and the evidence supporting it. **TEKS 4.9.E.i; TEKS 4.9.E.ii; TEKS 4.9.E.iii**

Writing

Students will use notes from the reading to formulate an argumentative essay body paragraph. **TEKS 4.11.B.i; TEKS 4.2.C**

Students will revise and edit drafts for complete simple and compound sentences. **TEKS 4.11.C; TEKS 4.11.D.i**

FORMATIVE ASSESSMENT

Activity Page 10.2	**Body Paragraph** Students will write a body paragraph that supports the claim. **TEKS 4.11.B; TEKS 4.2.C**
Check for Understanding	Students will write to explain claim, reasons, and evidence in their own words, providing an example of each. **TEKS 4.9.E.i**

TEKS 4.9.E.i Recognize characteristics and structures of argumentative text by identifying the claim; **TEKS 4.9.E.ii** Explaining how the author has used facts for an argument; **TEKS 4.9.E.iii** Identifying the intended audience or reader; **TEKS 4.11.B.i** Develop drafts into a focused, structured, and coherent piece of writing by organizing with purposeful structure, including an introduction, transitions, and a conclusion; **TEKS 4.2.C** Write legibly in cursive to complete assignments; **TEKS 4.11.C** Revise drafts to improve sentence structure and word choice by adding, deleting, combining, and rearranging ideas for coherence and clarity; **TEKS 4.11.D.i** Complete simple and compound sentences with subject-verb agreement and avoidance of splices, run-ons, and fragments.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (40 min.)			
Argumentative Text Structure	Whole Group	5 min.	❏ "Solar, Wind, and Batteries" Part 2: An Argument in Favor of Renewable Energy Sources Led by Texas ❏ Activity Page 10.1 ❏ chart paper
Read and Discuss	Independent/ Whole Group	20 min	
Identifying Claim, Reasons, and Evidence	Whole Group/ Partners	15 min	
Writing (50 min.)			
Writing a Body Paragraph	Whole Group/ Independent	50 min.	❏ notes collected throughout unit ❏ Activity Pages 6.2 and 10.2 ❏ Teacher Resource: Argumentative Essay Model

ADVANCE PREPARATION

Reading

- Assign students a partner for completing Activity Page 10.1.

Writing

- Prepare for students to revise their writing plans on Activity Page 6.2.
- Prepare to distribute notes accumulated throughout the unit for students to write their body paragraphs.

Universal Access

Reading

- Pair students purposefully to provide peer support.

Writing

- Provide access to a word processor or voice-to-text or browser extension.

CORE VOCABULARY

batteries, n. devices that change chemical energy into electric energy

generator, n. a machine that changes energy into electricity

intended audience, n. the group of people meant to receive a message

intermittent, adj. sporadic; irregular

mining, v. extracting materials from Earth

photovoltaic cell, n. a device that changes sunlight into electricity

reliable, adj. consistent; dependable

renewable energy, n. energy source that does not run out

replenished, v. refilled; reloaded

silicon, n. a chemical element used to make electronic circuits

solar farms, n. areas with a lot of solar panels to generate electricity

solar panels, n. devices that absorb the sun's rays as an energy source

subsidies, n. money, usually from taxes paid by citizens, given by a government to a person or company to provide a good or service for the public

wind turbines, n. devices with blades that turn wind energy into electricity

Vocabulary Chart for "Solar, Wind, and Batteries Part 2: An Argument in Favor of Renewable Energy Sources Led by Texas"		
Vocabulary Type	**Tier 3 Unit-Specific Words**	**Tier 2 General Academic Words**
Core Vocabulary	renewable energy solar panels mining photovoltaic cell silicon solar farms wind turbines generator batteries subsidies	replenished intermittent reliable intended audience
Multiple-Meaning		
Sayings and Phrases		

Start Lesson

Lesson 10: Solar, Wind, and Batteries Part 2

Reading

35M

Primary Focus: Students will identify the central claim of the argumentative text and the evidence supporting it. **TEKS 4.9.E.i; TEKS 4.9.E.ii; TEKS 4.9.E.iii**

Support

Ensure students understand the meanings of each of the conjunctions (i.e. *because* explains why something is true; *but* indicates a change in direction or opposing thought; *so* provides a cause and its effect).

ARGUMENTATIVE TEXT STRUCTURE (5 MIN.)

- Tell the students that in today's reading they will revisit the text that they began last class, but today they will read Part 2 of "Solar, Wind, and Batteries."
- Explain to students that in this text, the author makes a claim about renewable energy sources. Their job today is to detect their point of view and how they create their argument by giving reasons.
- Remind students that authors use evidence to support their claims. They also explain how the evidence supports their claims in their own words.
- Tell the students that authors think about who their audience is when coming up with a claim so that it is as convincing as possible. Ask, "Who is the author's audience in 'Solar, Wind, and Batteries'?" *(Expected responses include people who do not know about renewable energy sources.)*

TEKS 4.9.E.i Recognize characteristics and structures of argumentative text by: identifying the claim; **TEKS 4.9.E.ii** Explaining how the author has used facts for an argument; **TEKS 4.9.E.iii** Identifying the intended audience or reader.

READ AND DISCUSS (20 MIN.)

- Tell the students that in today's reading they will revisit the text "Solar, Wind, and Batteries." Remind students that in this text, the author writes about renewable energy sources and provides claims, reasons, and evidence (prompt students to recall the definition of claim) about the strengths and weaknesses of solar and wind energy.
- Direct students to read Part 2 of "Solar, Wind, and Batteries" independently.
- After students have finished reading Part 2 of "Solar, Wind, and Batteries," discuss the following questions:

1. **Literal:** What is the essay's claim? How does the essay support the claim? *(The essay claims that the rest of America should make the shift toward renewable energy sources, like Texas has. The claim is supported with evidence about how renewable energy sources do not run out. The essay goes on to further support the claim by explaining how the transition to renewable energy sources could cause an increase in available jobs.)*
2. **Evaluative:** Do you think the essay's evidence builds a strong enough argument to convince someone to make the shift to using renewable energy sources? Why or why not? *(Answers can include that the author uses evidence from trustworthy sources. For example, the text says "According to the U.S. Energy Information Administration, nearly every state has enough wind to build wind turbines.")*

IDENTIFYING CLAIM, REASONS, AND EVIDENCE (15 MIN.)

- After discussing the text, distribute Activity Page 10.1.
- Explain to students that they will find the claims, reasons, and evidence within the text for solar energy and wind energy.
- Display Activity Page 10.1 as a large anchor chart for class examples.
- Think-Aloud: I will first look through the text to find a claim. In this instance, a claim will be an argument in support of solar energy or wind energy. While reading, I noticed the introduction paragraph said, "It is time for all Americans to follow Texas and make the shift to using renewable energy sources." I am going to write "Americans should use more renewable energy" as my claim.
    - Direct students to fill in their chart, Activity Page 10.1, as well.

Support

Tell students that *transition* is a multiple-meaning word. In this text, *transition* means the process of changing.

Activity Page 10.1

- Think-Aloud: Now, let's consider how the author supports their claim with reasons and evidence. In the introduction, after the claim, the author says, "Doing so will help us rely on a source of power that doesn't run out." I am going to write this as the first reason that Americans should use more renewable energy. Now I will look for evidence. While reading, I noticed the first body paragraph said, "Any place the sun touches, even in very cold places, people could harness solar energy to make electricity." I am going to write this under "Evidence."
- Think-Pair-Share: How do we know when an author is writing a fact or an opinion in an argument? *(A fact can be proven. Facts are associated with evidence, such as specific examples or data.)*
- Tell the students that they will work with a partner to find the answers in the text and complete the chart on Activity Page 10.1.
    - While the students are working, circulate around the room to ensure both students in each partnership are actively engaged with the work and with their partner. Remind the students to refer to the text as they work, even if they are confident they recall the information accurately. Tell the students they should use the text to find and confirm their responses.
- When partners finish the page, ask them to pair up with another set of partners. Explain that their answers should match, but they do not have to be exactly the same, word for word. If they find answers that are different, the two sets of partners should return to the text to find the correct answer. If they are still in disagreement, the group should ask for assistance.

Check for Understanding

Ask the students to write an explanation of claim, reasons, and evidence in their own words, providing an example of each.

Support

Have the students verbally rehearse the claim and evidence before writing the responses.

Challenge

Have the students include the paragraph numbers of the text where the claim, reasons, and evidence were found next to the chart on Activity Page 10.1.

EMERGENT BILINGUAL STUDENTS

Reading
Reading for Information

Beginning
Work with students to highlight correct answers in the text. Have the students insert answers on Activity Page 10.1 from their highlighted text in a cooperative group.

Intermediate
Pair students to write the paragraph numbers where the correct response can be found next to each box on Activity Page 10.1.

Advanced/Advanced High
Pair students with a partner and tell them to take turns rereading the text, as needed.

ELPS 3.E; ELPS 3.F

Lesson 10: Solar, Wind, and Batteries Part 2

Writing

50M

Activity Page 3.3

Primary Focus: Students will use notes from the reading to formulate an argumentative essay body paragraph. **TEKS 4.11.B.i; TEKS 4.2.C**

Primary Focus: Students will revise and edit drafts for complete simple and compound sentences. **TEKS 4.11.C; TEKS 4.11.D.i**

WRITING A BODY PARAGRAPH (50 MIN.)

- Remind students of the prompt for the argumentative essay: "Texas benefits from a diversified energy industry that harnesses the potential of its variety of natural resources. Argue which of those factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources."
- Remind students that they drafted their introductory paragraph in Lesson 4 and have since revised their writing plans several times.
- Review the main components of an introduction, which include an interesting introduction to the topic; a clearly stated argument, or claim; and a brief description of the relevant evidence that supports their argument. Remind students that authors use facts and evidence to develop their ideas and strengthen the support of their claim.
- Explain to students that they will now write one of their two to three body paragraphs. Explain to students that a body paragraph supports the claim with relevant text evidence. Each body paragraph should group similar ideas together to support the claim. We consider these *groupings* the main reasons that defend the claim.
- Tell students that you will examine and discuss the body paragraph from the exemplar argumentative essay they have previously read in other lessons, "An Argument In Favor of Natural Gas Led by Texas," using their argumentative essay rubrics, Activity Page 3.3.
- Use the Teacher Resource to display the first body paragraph from the essay "An Argument In Favor of Natural Gas Led by Texas."

TEKS 4.11.B.i Develop drafts into a focused, structured, and coherent piece of writing by organizing with purposeful structure, including an introduction, transitions, and a conclusion; **TEKS 4.2.C** Write legibly in cursive to complete assignments; **TEKS 4.11.C** Revise drafts to improve sentence structure and word choice by adding, deleting, combining, and rearranging ideas for coherence and clarity; **TEKS 4.11.D.i** Complete simple and compound sentences with subject-verb agreement and avoidance of splices, run-ons, and fragments.

EMERGENT BILINGUAL STUDENTS

Writing
Body Paragraphs

Beginning
Have the students sit with you while changing their notes into sentences.

Intermediate
Allow students to work with a partner to verbally discuss ways to change their notes into sentences.

Advanced/Advanced High
Allow students to use a paper or digital dictionary to assist with writing vocabulary in their body paragraphs.

ELPS 3.E

Support

Pull a small group of students to assist with their body paragraphs. Have students highlight their notes that they will use to support their claim in the first body paragraph. Remind students that these notes must all share a similar key idea. Discuss their selections.

Challenge

Ask students to go through and revise their body paragraphs to include vocabulary taught throughout the unit.

- Think-Aloud: Based on the rubric, I am going to look through the body paragraph to determine if the argument is clear, if the organization is effective, and if there is specific and relevant evidence. First, I notice the reason to defend the claim is clear. The paragraph opens with a topic sentence that states the reason, "natural gas is critical to meet America's increasing energy demands because it can provide the large supply of energy needed to power our lives." Next, I notice the evidence is specific and relevant. For example, the paragraph says, "in 2011, natural gas was used more than any other source in America? It provided 30% of the total energy needed." Finally, the evidence is explained in a way that is organized. I know it is organized because it is logical and focused. For example, the writer explains where natural gas can be found and how recent innovations have made it even easier to access natural gas. Then they reiterate their main reason, that "It makes sense to use natural gas because of its abundance and its ability to meet the increasing demands for energy."
- Think-Pair-Share: Use the rubric and share an additional example of how the body paragraph earns an exemplary score. (Answers should include how the body paragraph includes a clear argument, effective organization, and relevant evidence.)
- Distribute student notes and writing plans from previous lessons. Explain to students that they will write one of their body paragraphs on Activity Page 10.2.
- Ask the students to look at the notes they have gathered so far. Remind students of the prompt: "Texas benefits from a diversified energy industry that harnesses the potential of its variety of natural resources. Argue which of those factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources."
- As students look at their notes, ask them to consider how they can incorporate conjunctions such as *because*, *but*, and *so* to connect words, phrases, and clauses and make their writing clear. Explain to students that they will use conjunctions to revise a simple sentence from their notes.
- Tell the students to ask themselves, "Do any of these details support my claim?" If so, direct the students to add them to their writing plan on Activity Page 6.2 under the reason that they best support. Then, they should write one of their body paragraphs on Activity Page 10.2, including a reason, evidence, and their explanation of the evidence.
- Students are expected to write legibly in cursive.

- Before ending the lesson, ask students to choose one simple sentence from their writing. After they choose one sentence, ask them to try to make their sentence a compound sentence by adding a conjunction. If support is needed, ask students to review their responses from the *because...but...so* activity at the beginning of the lesson.
- Ask students to share a newly revised compound sentence that they created during this activity. Invite students to share their sentences with the class. After sharing, ask a student volunteer to share what makes the sentence a good example of a compound sentence.
- Record characteristics of strong sentences on the whiteboard or chart paper as the students share. Leave this list visible for students to refer to throughout the writing process.

Check for Understanding

After taking notes, ask the students to indicate if they gathered information that supports their claim using a thumbs up, down, or in the middle.

End Lesson

LESSON

11 Houston Makes a Change

PRIMARY FOCUS OF LESSON

Reading

Students will synthesize textual evidence that supports the passage's main claim. **TEKS 4.6.H**

Writing

Students will strengthen the focus and coherence of the body paragraphs of their argumentative essay drafts. **TEKS 4.11.B.i; TEKS 4.2.C**

FORMATIVE ASSESSMENT

Activity Page 11.1

Students will synthesize information from "Houston: Balancing Energy, the Environment, and the Economy" to answer questions about the text. **TEKS 4.6.H**

Activity Page 11.2

Students will write focused and coherent body paragraphs for their argumentative essays. **TEKS 4.11.B.i; TEKS 4.2.C**

TEKS 4.6.H Synthesize information to create new understanding; **TEKS 4.11.B.i** Develop drafts into a focused, structured, and coherent piece of writing by organizing with purposeful structure, including an introduction, transitions, and a conclusion; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (40 min.)			
Close Reading	Independent	20 min.	❏ "Houston: Balancing Energy, the Environment, and the Economy" ❏ Activity Page 11.1 ❏ Image Cards 11A-1–11A-3
Analyze the Reading	Partners	20 min.	
Writing (50 min.)			
Examining Focused Body Paragraphs	Whole Group	10 min.	❏ student essays ❏ "An Argument in Favor of Natural Gas Led By Texas" (Teacher Resource) ❏ Activity Pages 3.2, 3.3, 6.2 and 11.2
Writing Focused Body Paragraphs	Independent/ Partners	20 min.	
Completing the Essay	Independent	20 min.	

ADVANCE PREPARATION

Reading

- Create sentence starters for intermediate emergent bilingual students to use on Activity Page 11.1.
- Prepare to show Image Cards 11A-1–11A-5.
- Chunk the text by dividing it into shorter portions for the students who need more support with independent reading.

Writing

- Prepare to display the Teacher Resource Argumentative Essay Model.
- Prepare for students to access resources from previous lessons including Activity Pages 3.2, 3.3, and 6.2.

Universal Access

Reading

- Pair students purposefully to provide peer support.
- Provide audio of the text or Read-Aloud, as needed.

Writing

- Provide access to audio of research materials or digital materials on a computer with text-to-voice software or browser extensions.
- Provide access to a word processor or voice-to-text software or browser extension.

CORE VOCABULARY

derrick, n. a large wooden frame used to support drilling equipment for the extraction of oil

green spaces, n. protected areas of natural plants and grass within an urban environment

hub, n. center of activity

innovators, n. people who develop new ideas or products

migrating, v. moving from one place to another according to the seasons

port, n. a city or town where ships load and unload goods for shipping and trade

Vocabulary Chart for "Houston: Energy Capital of the World"

Vocabulary Type	**Tier 3 Unit-Specific Words**	**Tier 2 General Academic Words**
Core Vocabulary	green spaces port derrick	hub innovators migrating
Multiple-Meaning		
Sayings		

Lesson 11: Houston Makes a Change

Reading

40M

Primary Focus: Students will synthesize textual evidence that supports the passage's main claim. **TEKS 4.6.H**

CLOSE READING (20 MIN)

- Tell the students that today they will read about a real place in Texas that made some changes to how they use energy, including trying some renewable sources.
- Remind students that they have already learned about some advantages and disadvantages of using renewable resources. Ask students to recall what they have already learned about renewable resources in Lessons 9 and 10.
- Tell students to turn to a neighbor and discuss the disadvantages of using solar and wind energy that they learned about earlier in this unit. Pause for partners to discuss. Invite the students to share their partner's response.
- Remind students that renewable energy sources have both advantages and disadvantages. Tell students that their reading today will help them learn more about how a city in Texas is using renewable energy sources.
- Tell students that they will be synthesizing, or combining, the knowledge they have learned in this unit as they read this text closely.
- Instruct students to jot down questions, thoughts, or details from this text that makes them think about other knowledge they have learned in this unit.
- Tell students to underline details in the text that are similar to a detail that they have read in a prior lesson's text, or circle details that make them think differently about what they have learned in a prior text.
- Finally, tell students that they need to be able to identify and explain the passage's main claim after reading.
- Direct the students to do a first read of the text "Houston: Balancing Energy, the Environment, and the Economy" independently.
- Display Image Cards 11A-1 - 11A-5. Ask students to explain how each image relates to what they read in the text.

TEKS 4.6.H Synthesize information to create new understanding.

ANALYZE THE READING (20 MIN.)

- Allow a few student volunteers to share their synthesis of text evidence and the main claim of the passage.
- Ask the students to preview the questions on Activity Page 11.1.
- Partner students to complete Activity Page 11.1. Remind the students to look back and reread the text as needed.

Check for Understanding

After students have completed the first question on Activity Page 11.1, ask the class to pause their work. Ask the students to share what they wrote as the claim of the article. Then, ask students to share how they wrote the same claim using different words.

Lesson 11: Houston: Energy Capital of the World

Writing

50M

Primary Focus: Students will strengthen the focus and coherence of the body paragraphs of their argumentative essay drafts. **TEKS 4.11.B.i; TEKS 4.2.C**

EXAMINING FOCUSED BODY PARAGRAPHS (20 MIN.)

Activity Page 3.2

- Display the Teacher Resource Argumentative Essay Model. Draw the students' attention to the third body paragraph (fourth paragraph of the essay).
- Distribute Activity Page 3.2.
- Tell students that in this activity they will color code the paragraph. *Blue* will be the reason, *red* will be the text evidence, and *purple* will be the way the author explains how the evidence supports their ideas.
- Read the first sentence of the paragraph and ask students what color is associated with it. *(blue)*
- Read the rest of the paragraph and ask students what sentences should be colored red? *("It is a dependable energy source because it can be consistently obtained from shale deposits all over Texas. Power plants are then able to generate energy 24 hours a day, 7 days a week, 365 days a year.")*
- Explain that the rest of the paragraph is written in the author's own words *(purple)*.
- Ask the following questions:
  - What was the purpose of the body paragraph? *(To defend the claim with a reason that is supported by evidence; to show how the evidence proves the claim is true to the author.)*
  - What did the writer do to ensure a clear and tightly connected relationship among all parts of their essay? *(Answers may vary but may include that they ordered their ideas logically; they used transition words like "Moreover.")*
  - Look back at the introduction paragraph and compare it to the body paragraph. How did the author focus their argument through both paragraphs? *(The introduction first introduced the reason for the claim, then the body paragraph clearly stated the reason in the topic sentence.)*

Support

Help students see the logical progression of ideas in the body paragraph by writing the main ideas of each sentence on the board.

TEKS 4.11.B.i Develop drafts into a focused, structured, and coherent piece of writing by organizing with purposeful structure, including an introduction, transitions, and a conclusion; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

- What can you do to make sure your argumentative essay is connected to the claim, focused, and clear? *(Answers may vary but may include to clearly state the claim and identify the reasons that defend the claim in the introduction; to restate the reasons in the topic sentences of body paragraphs; to use transition words; to logically sequence ideas; to write clear final sentences.)*

WRITING FOCUSED BODY PARAGRAPHS (20 MIN)

- Ask the students to turn to Activity Page 3.3. Remind the students that this is a tool they can use to evaluate their work, and that this is the rubric that will be used to score their essays.
- Ask students to identify the words clear, focused, and logical on the rubric. Point to each in the Argument, Organization, and Evidence categories.
- Remind students of the plan they wrote for their body paragraphs in Activity Page 6.2. Give students time to revise their plans to ensure a focused and coherent essay.
- Tell students that they will look closely at the rubric as they write the body paragraphs of their essays. They should aim to earn the highest score possible by including everything mentioned in the 3 column in their essays.
- Distribute Activity Page 11.2 and give students time to write the 2-3 body paragraphs of their essays.
- Students are expected to write legibly in cursive to complete assignments.
- Give students time to evaluate their essays using the rubric.

COMPLETING THE ESSAY (20 MIN.)

- Ask the students to reread their essays and evaluate which parts they have completed. They should put a check mark next to each part that they have completed. Then, they should look at what they still need to add during class today. All students will need to add a concluding paragraph.
- Display the Teacher Resource Argumentative Essay Model.
- Draw the students' attention to the last paragraph and ask the students what this part of the essay is called. *(conclusion)*
- Explain that the purpose of the conclusion is to restate the claim. Ask the students where they see that in the example. *("To sum it up, using natural gas as a core source of energy is key to maintaining our modern quality of life.")*

Activity Page 3.3, 6.2 and 11.2

EMERGENT BILINGUAL STUDENTS

Writing
Writing A Focused Argument

Beginning
Ask the students multiple choice questions such as, "What is one way to write a focused argument?"

Intermediate
Provide a sentence frame for students to use when writing their focused body paragraphs. Have students orally tell a partner the strategies they will use to ensure a focused essay before writing it. ___ can help make sure my essay is focused because ___.

Advanced/Advanced High
Have students orally tell a partner the strategies they will use to ensure a focused essay before writing it. Remind students to use key words from the text to strengthen the connection between the claim, reasons, and evidence.

ELPS 1.D; ELPS 1.F

- Explain that in addition to the claim, an effective conclusion will also have sentences meant to remind the reader of the evidence and make a final attempt to sway the reader.
- Read the remainder of the conclusion aloud, demonstrating where students can find evidence in the paragraph.
- Direct students to work on their essays, finding and adding details and completing their checklists. Remind students to use the transition words they learned in Lesson 2.

Check for Understanding

Explain how including a conclusion paragraph makes an argumentative essay stronger and more focused. Include details about the parts of an effective conclusion in your explanation.

End Lesson

LESSON

12 The Boy Who Harnessed the Wind

PRIMARY FOCUS OF LESSON

Reading

Students will identify cause and effect relationships in the story's plot that lead to the character's solution to the problem. **TEKS 4.8.C; TEKS 4.8.D**

Writing

Students will revise writing for organization and details and edit for English conventions, including: complete simple and compound sentences with subject-verb agreement and avoidance of splices, run-ons, and fragments. **TEKS 4.11.C; TEKS 4.11.D.i, ii, v, vi; TEKS 4.2.C**

FORMATIVE ASSESSMENT

Activity Page 12.2

Checklist Students will complete a revising and editing checklist to assess progress and determine final steps. **TEKS 4.11.C; TEKS 4.11.D.i, ii, v, vi**

TEKS 4.8.C Analyze plot elements, including the rising action, climax, falling action, and resolution; **TEKS 4.8.D** Explain the influence of the setting, including historical and cultural settings, on the plot; **TEKS 4.2.C** Write legibly in cursive to complete assignments. **TEKS 4.11.C** Revise drafts to improve sentence structure and word choice by adding, deleting, combining, and rearranging ideas for coherence and clarity; **TEKS 4.11.D** Edit drafts using standard English conventions, including: (i) complete simple and compound sentences with subject-verb agreement and avoidance of splices, run-ons, and fragments; (ii) past tense of irregular verbs; (v) adverbs that convey frequency and adverbs that convey degree; (vi) prepositions and prepositional phrases.

LESSON AT A GLANCE

	Grouping	Time	Materials
Reading (45 min.)			
Read-Aloud	Whole Group	15 min.	❏ *The Boy Who Harnessed the Wind* by William Kamkwamba and Bryan Mealer ❏ Activity Page 12.1
Analyzing the Story	Partners	25 min.	
Writing (50 min.)			
Combining Sentences	Whole Group	10 min.	
Revising and Editing the Essay	Independent	20 min.	❏ student essays ❏ Activity Pages 3.3, 12.2, 12.3
Partner Feedback	Partners	20 min.	

ADVANCE PREPARATION

Reading

- Prepare small groups of three to five students for the reading activity.
- Create or find audio of the text to assist struggling readers.

Writing

- Arrange a partner for beginning emergent bilingual students while working on Activity Page 12.2.

Universal Access

Reading

- Provide access to an audio copy of the text or preview the text prior to class.

Writing

- Provide access to a digital copy of the Activity Page 12.2 with voice-to-text software or browser extension.

Start Lesson

Lesson 12: *The Boy Who Harnessed the Wind*

Reading

45M

Primary Focus: Students will identify cause and effect relationships in the story's plot that lead to the character's solution to the problem. **TEKS 4.8.C; TEKS 4.8.D**

READ-ALOUD (15 MIN.)

- Tell students that today's story is about a boy from Malawi, a country in Africa, who had an energy problem in his community.
- Direct the students to preview the comprehension questions on Activity Page 12.1. Tell students to listen to this information as they enjoy the story.
- Read *The Boy Who Harnessed the Wind* to the students. Begin on the first page of the story, saving the author's note for the end. As you read, incorporate the following information and Guided Reading Supports:
    - p. 7: "William thinks a lot about magic. What else does he wonder about?" *(Answers will vary but the most accurate answers will reference how things or machines work.)*
    - p. 14: "What does William mean when he says 'electric wind'?" *(Answers may vary, but students should include wind power, turbines, or things like a fan.)*
    - p. 20: "William's village did not have many resources. How did he manage to build his windmill?" *(Answers may vary but should include gathering supplies from the junkyard, assembling the parts, and receiving help from friends and family.)*
    - p. 28 (last page of text): "What do you predict William will build next?"*(Answers may vary, but some students may include a water pump or well.)*

EMERGENT BILINGUAL STUDENTS

Reading
Reading for Information

Beginning
Point to the illustrations in the book as it is being read. Use prompts, such as "What do you see happening here?" or "What does the face/body language tell you in the picture?" to support comprehension.

Intermediate
Pair up students purposefully to provide language support while completing Activity Page 12.1.

Advanced/Advanced High
Remind the students that they learned about wind turbines earlier in the unit. Help the students make a connection between the wind turbine seen in this text and those seen earlier by recalling facts from that earlier article or looking back at Image Card 7A-1.

ELPS 1.A; ELPS 3.E; ELPS 4.F

TEKS 4.8.C Analyze plot elements, including the rising action, climax, falling action, and resolution; **TEKS 4.8.D** Explain the influence of the setting, including historical and cultural settings, on the plot.

ANALYZING THE STORY (30 MIN.)

- Explain that in this story, something happened—a cause—that created a negative effect for the village. Ask the students, "What was the setting of *The Boy Who Harnessed the Wind*?" *(central Malawi, Africa)*. Ask the students, "How did the setting influence the plot of the story?"(*Answers will vary but may include the dry climate in Malawi caused a lack of water in the village.*) Ask the students, "What happened that affected the village?" (*Correct student responses should include that a drought caused a food shortage.*)
- Explain that the next step in the story was to find a solution to the problem. Ask the students, "What problem was William trying to solve?" *(Correct student responses should include a way to get water to the fields to grow food.)*
- Ask the students for the solution William found for this problem. *(Correct answers should include building a wind turbine and/or creating power to pump water into the fields.)*
- Ask students for ideas about what they could do to help others in their community or school. *(Answers will vary.)*
- In partners, direct the students to Activity Page 12.1. Make the book available for partners who need to revisit the text as they work.
- Direct the students to complete Activity Page 12.1 with a partner. After completing the activity page, ask the partners to compare their work with another pair of students. After completing their work, direct the students to hand in the completed page to you or a central location in the classroom.

Activity Page 12.1

Challenge

Have students conduct independent research on how to make a homemade wind turbine.

Support

Provide the page numbers where the responses to Activity Page 12.1 can be found. See the answer key for details.

Check for Understanding

Ask students to make and explain their claim about wind energy after reading the text.

Lesson 12: *The Boy Who Harnessed the Wind*

Writing

50M

Primary Focus: Students will revise writing for organization and details and edit for English conventions, including: complete simple and compound sentences with subject-verb agreement and avoidance of splices, run-ons, and fragments. **TEKS 4.11.C; TEKS 4.11.D.i, ii, v, vi; TEKS 4.2.C**

COMBINING SENTENCES (10 MIN.)

- Read this question aloud to students:

  David wants to combine the ideas in sentences 1 and 2. Write a new sentence that combines these ideas in a clear and effective way.

  (1) It did not rain for a long time in William's village. (2) They could not grow crops for food.

- Review the criteria for getting full credit for a written response:

  To obtain full credit (1 point), the student will:

  - create one complete sentence.
  - combine the ideas in both sentences effectively.
  - write clearly in cursive.

- Give time for students to write a response. Have students share their responses with the class. *(Correct answer: It did not rain for a long time in William's village, so they could not grow crops for food.)*
- Have students put a thumbs up in the air if they feel they would have received 1 point for their answer, and have them put a thumbs down if they had some areas they still needed to work on.

REVISING AND EDITING THE ESSAY (20 MIN.)

Activity Page 12.2

- Ask the students to turn to the revising and editing checklist on Activity Page 12.2.
- Have students look to find simple sentences that need to be combined to make a compound sentence. Remind students about using conjunctions to connect their ideas.

TEKS 4.11.C Revise drafts to improve sentence structure and word choice by adding, deleting, combining, and rearranging ideas for coherence and clarity; **TEKS 4.11.D** Edit drafts using standard English conventions, including: (i) complete simple and compound sentences with subject-verb agreement and avoidance of splices, run-ons, and fragments; (ii) past tense of irregular verbs; (v) adverbs that convey frequency and adverbs that convey degree; (vi) prepositions and prepositional phrases; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

Activity Pages 3.3 and 12.3

- Explain to students that today they are going to use this checklist to help revise and edit their own work and the work of a partner.
- Read through the checklist with the students reminding students of the prior lessons about each topic.
- Direct students to revisit their work and add checkmarks to items that are complete.
- Circulate the classroom for individual writing conferences as students independently revise their responses. Guide students in using the Argumentative/Opinion/Informational Writing Rubric on Activity Page 3.3 to identify areas of strength and areas that need improvement in their writing.
- If there are areas that need work, students should work to complete them at this time.
- Remind students that they can revise their work by adding, deleting, combining, and rearranging ideas. Then, they should edit their writing using the checklist.

Support

Ask the students to highlight or underline the claim, reasons, and evidence in their writing.

Challenge

Direct students to focus on changes to word choice, selecting specific words to create a reaction in the Reader.

PARTNER FEEDBACK (20 MIN.)

- After completing their checklist independently, invite the students to trade essays with a partner. Partners should read their classmate's work and complete the Activity Page 12.3.
- Explain that when listing the evidence for the partner's essay, there may not be the same number of pieces of evidence as spaces on the checklist. They should leave lines blank or add lines as needed.
- After returning essays to the writer, direct students to ask any clarifying questions about the feedback. Have students review one of the simple sentences they revised to make it a compound sentence.
- Conduct tableside checks of Activity Page 12.2 and 12.3 while the students work.
- Review adverbs that convey frequency and degree, prepositions, and using the correct form of irregular past-tense verbs with students as needed.

EMERGENT BILINGUAL STUDENTS

Writing
Peer Review

Beginning
Allow the students to preview the peer review checklist and discuss it with a partner before reading the partner's essay.

Intermediate
Have the students fill in the checkmarks and provide the rest of the feedback verbally, while the essay's author records it on paper.

Advanced/Advanced High
Have the students refer to Activity Page 4.2 as a visual aid for help finding parts of the partner's essay.

ELPS 3.H; ELPS 4.D

Check for Understanding

Ask the students to share their compliments at the bottom of Activity Page 12.3. Ask each volunteer the follow-up question. "What details did you add that earned you that compliment?"

End Lesson

LESSON

13 Presenting Research

PRIMARY FOCUS OF LESSON

Writing

Students will revise writing for organization and details and edit for English conventions. **TEKS 4.11.C; TEKS 4.11.D.ii, v, vi; TEKS 4.2.C**

Students will use the text of their argument essay to create a multimodal presentation, including primary and secondary source images. **TEKS 4.9.F**

FORMATIVE ASSESSMENT

Activity Page 13.1

My Presentation Checklist

Students will evaluate a multi-modal presentation. **TEKS 4.9.F**

TEKS 4.11.C Revise drafts to improve sentence structure and word choice by adding, deleting, combining, and rearranging ideas for coherence and clarity; **TEKS 4.11.D** Edit drafts using standard English conventions, including: (ii) past tense of irregular verbs; (v) adverbs that convey frequency and adverbs that convey degree; (vi) prepositions and prepositional phrases; **TEKS 4.2.C** Write legibly in cursive to complete assignments; **TEKS 4.9.F** Recognize characteristics of multimodal and digital texts.

LESSON AT A GLANCE

	Grouping	Time	Materials
Writing (90 min.)			
Using Partner Feedback	Independent	10 min.	❏ student essays ❏ peer feedback from Activity 12.3 ❏ Revising and Editing Checklist from Activity Page 12.2 ❏ student-selected research materials that include images ❏ supplies for capturing digital images (such as a camera app or methods of obtaining paper images, such as a color printer or magazines) ❏ access to computers with the ability to create a slide deck or large paper or poster board ❏ Teacher Resource: Argumentative Essay Model ❏ Activity Page 13.1
Creating the Presentation	Independent	35 min.	
Using the Presentation Checklist	Independent	30 min.	
Evaluating the Presentation	Partners	15 min.	

ADVANCE PREPARATION

Writing

- Prepare a model, showing students how the teacher would like the presentations set-up. This may be a desk with a model display or a diagram displayed on the board.
    - Display the Argument Essay Model (Labeled) from Lesson 3 or the Teacher Resources, alongside either chart paper or space on a whiteboard for drawing a model presentation layout.
- Gather necessary materials for students to create their presentations.
    - Necessary materials for student presentations will depend on whether the students will make digital or paper products. For digital products, students will need access to computers with a slide-making program. To create paper products, students will need four pieces of paper, markers, scissors, glue or tape, and access to a printer or a magazine that may be cut up.
    - Both digital and paper presentations will need access to images. Ideally, students should have access to locally approved resources that connect to the students' writing. If that is not possible, students may use images cut from discarded magazines or trace images found in books.
    - Invite students to collect primary source images by taking and bringing in their own pictures. Subjects may include power lines, gas pumps, or examples of alternative energy that can be found in the student's community.
- Arrange partners for completing Activity Page 13.1.

Universal Access

Writing

- Chunk the tasks of creating the presentation into smaller pieces with teacher check-ins in between.
- Divide the checklist into smaller, more manageable portions with a teacher check-in between portions.

Start Lesson

Lesson 13: Presenting Research

Writing

90M

Primary Focus: Students will revise writing for organization and details and edit for English conventions. **TEKS 4.11.C; TEKS 4.11.D.ii, v, vi; TEKS 4.2.C**

Primary Focus: Students will use the text of their argument essay to create a multimodal presentation, including primary and secondary source images. **TEKS 4.9.F**

USING PARTNER FEEDBACK (10 MIN.)

- Remind students that in Lesson 12 they used a revising checklist to check their own work and a partner's wok. Today they will start by working to improve their essays by making changes based on that feedback and any other goals they set for themselves.
- Have the students review Activity Pages 12.2 and 12.3. They should identify at least one area that they want to improve on their essay and work independently or with their partner to improve their work. Remind students they are expected to write legibly in cursive.

CREATING THE PRESENTATION (35 MIN.)

- Model how to transfer the text of their essay, breaking it up by paragraphs (introduction, including the claim, body paragraph, conclusion) onto five slides or pages, respectively.
    - Display the Argumentative Essay Model (Labeled) from Lesson 3.
    - Point to each labeled part of the essay and explain that each paragraph will go on its own slide with pictures that connect to the text in that paragraph.
    - Draw a rectangle representing a slide on the chart paper or whiteboard. Explain that the text of the paragraph would be copied onto the slide as you either copy the text of the paragraph or draw a placeholder like a line onto the rectangle.

Support

Tell the students which resources to use based on where they will be able to locate images pertinent to their essay text. For example, if a student is writing about energy sources that do not cause pollution, narrow the student's ideas down to one or two types of clean energy. Direct the student to resources mainly about one or two types of energy versus a resource that covers a wide range of energy. This will reduce the amount of time the students spend browsing for usable images.

Challenge

Tell the students to label their images as primary or secondary images in the presentation.

TEKS 4.11.C Revise drafts to improve sentence structure and word choice by adding, deleting, combining, and rearranging ideas for coherence and clarity; **TEKS 4.11.D** Edit drafts using standard English conventions, including: (ii) past tense of irregular verbs; (v) adverbs that convey frequency and adverbs that convey degree; (vi) prepositions and prepositional phrases; **TEKS 4.2.C** Write legibly in cursive to complete assignments; **TEKS 4.9.F** Recognize characteristics of multimodal and digital texts.

- Tell the students that the pictures would be arranged around the text to add visuals that both capture the audience's attention and add extra visual information to the slide. Draw small rectangles on the slide to demonstrate.
- Tell the students that their slides do not need to be arranged exactly like the model, but they should include the text of their paragraph and accompanying pictures.

- Model how to create a bibliography page.
  - Explain that the last page of the presentation will be a bibliography, or list of sources used for information. Remind the students that as they have been conducting research, they have been recording their sources at the top of their notes. Explain that images must be cited for the same reason words need to be cited. Credit must be given for anything you did not create, text or images.
  - Write the model bibliography entry shown below on chart paper or a whiteboard below the model slide.

Example	
Title	"Using and Saving Energy"
Author	By: ReadWorks.org
Type of Resource	Online article

- Give the students directions for creating their presentations
  - Tell students to copy their paragraphs onto their slides or paper, one paragraph to each page.
  - Show the students what is available to them from obtaining images. This will depend on what material you have access to based on your advanced preparation for this lesson. Model how and where to access locally approved resources. Set guidelines for using paper resources such as what they may or may not cut apart or capture images.
  - For students creating hard copy products, provide tracing paper to assist in copying challenging images. For students entering digital products, encourage the use of multimedia such as moving GIFs, photographs, or short video clips.

EMERGENT BILINGUAL STUDENTS

Writing
Creating Presentations

Beginning
Allow students to use keywords as captions for images.

Intermediate
Assign a partner to work side by side. Tell the students to ask their partners for help defining words or tasks as needed.

Advanced/Advanced High
Have students orally explain the different parts of their essay before beginning.

ELPS 1.C; ELPS 3.E; ELPS 3.F

TEKS 4.11.D Edit drafts using standard English conventions.

- Remind the students to include their bibliography on the last page. Tell the students that if they are including a primary source image that they created themselves (such as a picture they took) or information from an interview they conducted, it should still be included in the bibliography with themselves as the photographer or author.

USING THE PRESENTATION CHECKLIST (30 MIN.)

- Direct students to the presentation checklist on Activity Page 13.1.
- Explain that the students should complete the top portion (My Presentation Checklist) first.
- Instruct students to use this time to check and add anything that is missing from their presentations.
- Direct students to work on their presentations, adding what is needed.

EVALUATING THE PRESENTATION (15 MIN.)

- Remind the students to trade with a partner when they are finished with their presentation. The partner should use the "Partner Checklist" column on Activity Page 13.1 to check that the work is complete. After completing their checklist, students should hand in their checklist to you or to another central location for collecting work.
- Circulate around the classroom checking that the student's work is almost ready to be presented during the next class.

Check for Understanding

Ask the students, "If you had time to add one more thing to your presentation, what would it be and why? Tell the students to share their answers with their partners.

End Lesson

EMERGENT BILINGUAL STUDENTS

Writing
Peer Review

Beginning
Allow students to complete the checklist collaboratively with your help instead of a peer partner.

Intermediate
Pair students purposefully and direct them to complete the checklist collaboratively instead of trading work.

Advanced/Advanced High
Remind the students that they can look back at other checklists that may help with identifying components of the presentations.

ELPS 1.C; ELPS 3.E

LESSON

14 Presenting Projects

PRIMARY FOCUS OF LESSON

Writing

Students will make final changes to their presentations. **TEKS 4.11.E**

Presentation

Students will present their multimodal presentations using a museum walk. **TEKS 4.13.H; TEKS 4.2.C**

FORMATIVE ASSESSMENT

Activity Page 14.2

Reflect Students will complete a reflection of their published work. **TEKS 4.11.E; TEKS 4.2.C**

TEKS 4.11.E Publish written work for appropriate audiences; **TEKS 4.13.H** Use an appropriate mode of delivery, whether written, oral, or multimodal, to present results; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

LESSON AT A GLANCE

	Grouping	Time	Materials
Writing (30 min.)			
Editing the Essay	Independent	15 min.	❏ Activity Pages 12.2, 13.1
Editing the Presentation	Independent	15 min.	
Presentation (60 min.)			
Museum Walk	Whole Group	40 min.	❏ Activity Pages 14.1, 14.2 ❏ KWL chart from Lesson 1
Self-Reflection	Independent	15 min.	
Close KWL Chart	Whole Group	5 min.	

ADVANCE PREPARATION

Presentation

- Prepare and post sentence starters for the museum walk feedback form, Activity Page 14.1, Audience Feedback.

Writing

- Arrange partners for completing Activity Page 13.1.

Universal Access

Presentation

- Provide sentence starters for use on the feedback form during the museum walk.

Start Lesson

Lesson 14: Presenting Projects

Writing

30M

Primary Focus: Students will make final changes to their presentations.

TEKS 4.11.E

EDITING THE ESSAY (15 MIN.)

- Direct the students to consult their Activity Page 12.2. Compare it to their essay and make any necessary changes.
- Remind students to hand in their work according to your directions. You may choose to have students hand in their work to a central location in the classroom or collect the work from students yourself.

Activity Page 12.2 and 13.1

EDITING THE PRESENTATION (15 MIN.)

- Direct students to consult their Activity Page 13.1, compare it to their presentation, and make any necessary changes.

TEKS 4.11.E Publish written work for appropriate audiences.

Lesson 14: Presenting Projects

Presentation

60M

Primary Focus: Students will present their multimodal presentations using a museum walk. **TEKS 4.13.H; TEKS 4.2.C**

MUSEUM WALK (40 MIN.)

- Direct students to set up their presentation as a display. Hard copy products should have all parts visible. Students presenting digital products may print out their work, if appropriate, or display the work on a screen.
- At each presentation station, students should have Activity Page 14.1 available for peer feedback. The page may be removed from the Activity Book while being displayed.
- Explain that the museum walk is about celebrating the work, not criticizing it. Remind the students that the feedback is for positive comments only. Write these sentence frames in a place that is visible from where the students are conducting the museum walk.
  - I like the _____ that you included because . . .
  - I thought it was interesting when you wrote . . .
  - Your _____ in the presentation look great.
- Tell the students they may use these frames to help them or write their own positive comments.
- To promote an equitable amount of comments for all students, tell the students that if a page is full, they should not add to it. If a page has an empty space for a compliment, add one before moving on to the next exhibit.
- Stagger the starting point of students as they circulate through the exhibits to ensure an even distribution of comments on the feedback forms.
- As students visit the exhibits, they should leave feedback on at least three of their classmates' feedback pages.

Activity Page 14.1

Challenge

Post an additional piece of blank paper at the students' displays. Have students write their claim statements in a bubble at the center of the paper.

Ask students to write what they thought was the essay's strongest piece of evidence, using information found in the display, as they visit the exhibit by adding a bubble to the paper. The result will look similar to a word cloud. Be sure to make the original claim stand out by using markers to distinguish it from the student responses

Support

Give the students the sentence starters being displayed for audience feedback on individual pieces of paper for students to carry with them while viewing their classmates' exhibits. A bookmark or paper strip that can be wrapped around the students' wrists is a useful way to make these prompts portable.

TEKS 4.13.H Use an appropriate mode of delivery, whether written, oral, or multimodal, to present results; **TEKS 4.2.C** Write legibly in cursive to complete assignments.

Activity Page 14.2

Check for Understanding

Ask for examples of positive comments before beginning the museum walk.

EMERGENT BILINGUAL STUDENTS

Writing

Writing

Beginning
Arrange for a student to jot down the compliments from their group at each exhibit.

Intermediate
Have the students select one sentence frame to use consistently on each audience feedback form.

Advanced/Advanced High
Have students verbally rehearse responses before completing the reflection form.

ELPS 1.B; ELPS 3.E

SELF-REFLECTION (15 MIN.)

- After viewing the exhibits and leaving feedback for at least three classmates, the students should return to their seats (or alternate workspace while the presentations are being displayed).
- At their workspace, direct students to complete Activity Page 14.2. Students are expected to write legibly in cursive to complete assignments.
- After completing their reflections, gather the students for a project debrief. Ask the students the following:
  - What was a favorite part of this project?
  - What was challenging about this project?
  - What would you recommend to students working on this project in the future?
- Collect Activity Page 14.2 from the students.

CLOSE KWL CHART (5 MIN.)

- As a whole group, ask the students to share what they now know about energy. Add student contributions to the L column of the KWL chart.

End Lesson

Teacher Resources

Grade 4	Unit 9

Teacher Guide

Grade 4 | Unit 9

Teacher Resources

In this section you will find:

- Activity Page 3.1 Answer Choice Bank
- Argumentative Essay Model
- Labeled Argumentative Essay Model
- Argumentative/Opinion/Informational Writing Rubric
- Revising and Editing Checklists
- Activity Book Answer Key
- Texas Essential Knowledge and Skills

ACTIVITY PAGE 3.1 ANSWER CHOICE BANK

Each answer found here is in sequential order and matches the answer key. When using this with students, adjust the number of choices to fit the needs of the students, taking care to include the correct answer for the questions assigned.

- Ancient Egyptians used petroleum to prepare mummies for burial.
- Knights used oil to shine their armor, shields, and swords.
- Native Americans used oil in medicine and ointments.
- Oil was used to seal cracks and seams in wooden boats.
- Oil helps wagon wheels turn more easily.
- Petroleum was burned in lamps for light.
- Petroleum was mixed in sand and gravel to pave roads.
- Whale oil was overused and in short supply, making it expensive.
- It was discovered that crude oil could be refined into kerosene.
- There was money to be made in selling oil.
- He knew natural gas could be found in the hill and that natural gas and oil (both fossil fuels) are often found together.
- Jim Hamill was hired to help dig a hole deep enough to extract the oil. He used a rotary drill instead of a chisel drill to dig through the sandy ground.
- A rotary drill cut through the sand instead of compacting it like a chisel drill.
- The mud helped to carry the sand out of the hole, instead of the sand falling back in when the drill bit was removed.
- Flammable fumes made the area prone to fire.
- The oil ran into streams and covered the animals, trees, and houses in the area.
- Oil and fumes in the air made it difficult for the crew to work due to a lack of fresh air.
- A barrier of dirt was dug to contain the flow of oil.
- The ground was plowed to remove the flammable dirt.
- A framework was built so that the oil could pass through a pipe. A valve was connected to the pipe to stop the flow of oil.

ARGUMENTATIVE ESSAY MODEL

An Argument In Favor of Natural Gas Led by Texas

Our modern world runs on energy, and the need for it increases with demand. According to the US Energy Information Administration, energy use in America alone increased more than 8 times from 1900 to 2011. Energy is used in industries such as farming, transportation, and technology, and is key for their success. One essential source of energy is natural gas, a resource that is abundant in Texas. The production and use of natural gas from Texas as the leading source of energy is critical to meet these increasing demands and ensure America's future.

First, natural gas is critical to meet America's increasing energy demands because it can provide the large supply of energy needed to power our lives. Did you know that in 2011, natural gas was used more than any other source in America? It provided 30% of the total energy needed. Natural gas is extracted from shale, a type of sedimentary rock. There are large shale formations throughout Texas that hold enormous amounts of natural gas. Recent innovations in drilling techniques have enabled access to these large reserves, increasing the supply of energy available in Texas. It makes sense to use natural gas because of its abundance and its ability to meet the increasing demands for energy.

Another reason to use natural gas is that it has fewer environmental risks than other sources of energy. It is true that using natural gas requires drilling and releases some pollutants; however, the next largest source of energy used to produce electricity is coal, which requires harmful and dangerous mining and releases more significant amounts of pollution. For example, today China uses coal as its primary energy source, leading to significant air pollution problems in that country. Other forms of energy used to generate electricity such as wind and solar generate less air pollution, but these sources also require mining and large tracts of land. Lastly, because their materials cannot be recycled, these sources still have some negative environmental impacts.

The third major advantage of using natural gas is its reliability. Wind and solar power can only generate power when the wind is blowing or when the sun is shining. Also, there's a limit to the amount of energy from wind and solar that can be stored by the technology of today's electric companies. Because people need a constant and reliable source of energy, natural gas is the best solution. It is a dependable energy source because it can be consistently obtained from shale deposits all over Texas. Power plants are then able to generate energy 24 hours a day, 7 days a week, 365 days a year. Moreover, innovations have already improved the ability to store fuel and generate electricity from natural gas. As a result, energy production can easily be increased and decreased to match demand, making it available when it is needed.

To sum it up, using natural gas as a core source of energy is key to maintaining our modern quality of life. The natural gas supplied by Texas provides the large amounts of energy we need. Natural gas is more reliable and has fewer environmental risks than other energy sources. Texas can even export natural gas to other countries, helping improve the quality of life for people around the world. The next time you play outside under the lights, power up a computer, or visit the doctor's office, remember the critical role natural gas plays in powering your life!

LABELED ARGUMENTATIVE ESSAY MODEL

An Argument In Favor of Natural Gas Led by Texas

Introduction Paragraph	Our modern world runs on energy, and the need for it increases with demand. According to the US Energy Information Administration, energy use in America alone increased more than 8 times from 1900 to 2011. Energy is used in industries such as farming, transportation, and technology, and is key for their success. One essential source of energy is natural gas, a resource that is abundant in Texas. **The production and use of natural gas from Texas as the leading source of energy is critical to meet these increasing demands and ensure America's future.**
Claim	
First Body Paragraph	**First, natural gas is critical to meet America's increasing energy demands because it can provide the large supply of energy needed to power our lives.** Did you know that in 2011, natural gas was used more than any other source in America? It provided 30% of the total energy needed. Natural gas is extracted from shale, a type of sedimentary rock. There are large shale formations throughout Texas that hold enormous amounts of natural gas. Recent innovations in drilling techniques have enabled access to these large reserves, increasing the supply of energy available in Texas. It makes sense to use natural gas because of its abundance and its ability to meet the increasing demands for energy.
Reason	
Second Body Paragraph	**Another reason to use natural gas is that it has fewer environmental risks than other sources of energy.** It is true that using natural gas requires drilling and releases some pollutants; however, the next largest source of energy used to produce electricity is coal, which requires harmful and dangerous mining and releases more significant amounts of pollution. For example, today China uses coal as its primary energy source, leading to significant air pollution problems in that country. Other forms of energy used to generate electricity such as wind and solar generate less air pollution, but these sources also require mining and large tracts of land. Lastly, because their materials cannot be recycled, these sources still have some negative environmental impacts.
Reason	
Third Body Paragraph	**The third major advantage of using natural gas is its reliability.** Wind and solar power can only generate power when the wind is blowing or when the sun is shining. Also, there's a limit to the amount of energy from wind and solar that can be stored by the technology of today's electric companies. Because people need a constant and reliable source of energy, natural gas is the best solution. It is a dependable energy source because it can be consistently obtained from shale deposits all over Texas. Power plants are then able to generate energy 24 hours a day, 7 days a week, 365 days a year. Moreover, innovations have already improved the ability to store fuel and generate electricity from natural gas. As a result, energy production can easily be increased and decreased to match demand, making it available when it is needed.
Reason	
Restate Claim	To sum it up, using natural gas as a core source of energy is key to maintaining our modern quality of life. The natural gas supplied by Texas provides the large amounts of energy we need. Natural gas is more reliable and has fewer environmental risks than other energy sources. Texas can even export natural gas to other countries, helping improve the quality of life for people around the world. *The next time you play outside under the lights, power up a computer, or visit the doctor's office, remember the critical role natural gas plays in powering your life!*
Summary of Main Ideas	
Memorable Last Statement	

ARGUMENTATIVE/OPINION/INFORMATIONAL WRITING RUBRIC

	Score Point 3	Score Point 2	Score Point 1	Score Point 0
Development and Organization of Ideas				
	Fully Developed	**Developing**	**Limited**	**Not Developed**
Argument/Opinion	• The claim is clearly stated and fully developed. • The ideas in the essay are focused to match the claim.	• The claim is stated but may not be fully developed. • The ideas in the essay are not always focused or consistent.	• The claim is stated but not developed appropriately in response to the prompt. • The ideas in the essay are not focused or consistent.	• The claim is not stated. • The ideas in the essay are not focused or consistent.
Organization	• The introduction and conclusion are effective. • The ideas and paragraphs follow a logical order with transitions.	• The introduction and conclusion are included. • The ideas and paragraphs follow a logical order.	• The introduction and conclusion may or may not be included. • The ideas and paragraphs are scattered and unorganized.	• The introduction and conclusion are not included. • The ideas do not follow a logical order.
Evidence	• Claims are supported with relevant evidence from at least two sources. • Evidence is cited properly and flows smoothly. • Ideas are explained in a clear and specific way.	• Claims are supported with relevant evidence from at least one source. • Evidence is cited properly. • Ideas are explained in a somewhat clear way.	• Claims are not supported with relevant evidence. • Ideas are explained in a somewhat unclear or confusing way.	• Claims are not supported with relevant evidence. • Ideas are not explained.
Expression of Language	• Sentence types and lengths are varied to connect ideas logically. • Key words and specific vocabulary from the prompt and text are used effectively.	• Sentence types and lengths are somewhat varied to connect ideas. • Some key words and specific vocabulary from the prompt and text are used.	• Sentence types and lengths are rarely varied. • Sentence structure errors are evident. • Key words and specific vocabulary from the prompt and text are rarely used.	• Sentence types and lengths are not varied. • Sentence structure errors are evident. • Key words and specific vocabulary from the prompt and text are not used.
Language Conventions				
		Consistent	**Inconsistent**	**Little to None**
Command of Conventions		Nearly no errors with punctuation, capitalization, sentence structure, grammar nor spelling.	Some errors with punctuation, capitalization, sentence structure, grammar and spelling. Errors do not impact the clarity of the essay.	Many errors with punctuation, capitalization, sentence structure, grammar and spelling. Errors impact the clarity of the essay.

Points: Development and Organization of Ideas ___ + Language Conventions ___ = ____ Total Points (score from 0-5)

*Please note that if a response receives a score point 0 in the "Development and Organization of Ideas" category, the response will also earn 0 points in the "Language Conventions" category.

REVISING AND EDITING CHECKLISTS

Revising Checklist	After checking for each item, place a checkmark here.
The central idea and details in each paragraph match.	
There are a variety of short, medium, and long sentences.	
The words were carefully chosen for the essay's purpose.	
Transition words are used between ideas and paragraphs.	
There are adverbs and prepositions that add clarity and interest to the essay.	

Editing Checklist	After checking for each item, place a checkmark here.
Complete sentences with subject-verb agreement	
Correct capitalization	
Correct spelling, including irregular past-tense verbs , adverbs, and prepositions	
Correct punctuation	

ACTIVITY BOOK ANSWER KEY

NAME: _____
DATE: _____

1.1 Activity Page

Modern Energy Sources Make Life Easier

Directions: Think about the machines and inventions that use energy every day to make your life easier. List as many as you can in the chart below. Use the examples to get you started.

Communication	Products	Daily Living	Transportation
telephone	*dishwasher*	*stove*	*trains*
	Answers may vary.		

Other

Answers may vary.

NAME: _____
DATE: _____

1.2 Activity Page

Vocabulary

oil, n. a slippery liquid made from petroleum and used for fuel

fuel, n. a substance that can be burned as a source of energy

fuel, v. to supply power or energy
Example: fuel an argument

energy, n. the ability to do work or cause change

Directions: Connect the sentence on the left to the definition on the right that matches the way the word is being used.

The mechanic added **oil** to the car's engine.	• **fuel,** v. to supply power or energy Example: fuel an argument
Make sure we have enough **fuel** in the tank before the big trip.	• **fuel,** n. a substance that can be burned as a source of energy
My first goal **fueled** my victory.	• **oil,** n. a slippery liquid made from petroleum and used for fuel
The battery was too low on **energy** to turn on the toy.	• **energy,** n. the ability to do work or cause change

NAME: _____
DATE: _____

1.4 Activity Page

Argumentative Essay Prompt

Directions: Read the following prompt.

> Texas benefits from a diversified energy industry that harnesses the potential of its variety of natural resources. Argue which of those factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources.

Discuss the prompt above with a partner. On the lines below, explain what you are supposed to argue in your essay throughout this unit.

Answers may vary.

NAME: _____
DATE: _____

1.5 Activity Page

Choosing an Argument

Directions: In the chart below, write the two possible arguments that the writing prompt asks you to choose from. Work with your small group to reread "Texas Energy: Variety Is the Spice of Life" and record the evidence from that text that could be used to support each argument. Write legibly in cursive.

Possible Arguments	Text Evidence
Variety of natural resources available in Texas is more important	• "Oil and natural gas reserves, coal, sun, wind, and uranium—which is used to produce nuclear energy—are all naturally available in Texas." • "These resources are needed to produce enough energy to provide things like electricity, heat, and fuel throughout the state." • "Using a variety of energy sources means that the strengths of one source can balance out the weaknesses of another." • "There is a lower risk of power shortages when energy can be harnessed from multiple sources."
Innovations are more important	• "Although the natural resources available in Texas give the state an advantage, these natural resources do not create usable energy on their own. The power of natural resources must be harnessed and turned into usable energy." • "First, people must modify the environment in order to obtain the natural resources." • "Then, the natural resources have to be processed, or converted into a useful form." • "New technologies can solve problems within the energy industry. Innovations can also lead to new opportunities in energy." • "This is because innovations in the design of windmills allowed Texans to access water deep underground, in parts of the state where running water was less available." • "This never-ending cycle of innovation keeps the energy industry in Texas strong."

Directions: After you have identified the text evidence for each argument, circle the argument that you think has stronger supporting evidence. This is the argument that you will write about in your essay.

NAME: _____

DATE: _____

2.1 Activity Page

Visualizing: Stop and Sketch

Directions:

Part 1: Listen as your teacher reads the text. Imagine what you are hearing as pictures in your mind. At each pause in the text, stop and sketch what you visualized.

Part 2: Add evidence from the text below each sketch to support the details shown in the drawings.

Sketch 1:	Sketch 2:	Sketch 3:
Text Evidence:	Text Evidence:	Text Evidence:

Answers may vary but should include quoted or paraphrased text that matches the illustration with a page number.

NAME: _____

DATE: _____

2.2 Activity Page

Make a Claim

Example:

I claim that the people around Spindletop were afraid when oil was first discovered there because the event was loud.

Directions: Make two possible claims in response to the writing prompt on Activity Page 1.4. Try more than one way to write your claim, using key words from the text. Next, write one overall reason to support your claim. (In your argumentative essay, the reasons will become a part of the topic sentences of your body paragraphs). Then, determine which claim makes the strongest argument. Write legibly in cursive.

1. I claim that _____

because _____

2. I claim that _____

because _____

Answers may vary but should include an opinion-based claim statement and supporting details.

NAME: _____

DATE: _____

3.1 Activity Page

"The Beginnings of Oil in the United States" and "Big Changes" Comprehension Questions

1. What are some ways people used oil in the past?

Answers may vary but should include specific evidence as found in the "Oil in History" section of "The Beginnings of Oil in the United States"

2. What was the problem with using whale oil for light in the nineteenth century?

Whale oil was overused and in short supply, making it expensive. ("Oil in History" from "The Beginnings of Oil in the United States")

3. What solution was found to solve the problem with affordable lighting fuel?

It was discovered that crude oil could be refined into kerosene. ("Oil in History" from "The Beginnings of Oil in the United States")

4. After Edwin Drake drilled an oil well in 1859, why were hundreds more wells drilled throughout the country?

There was money to be made in selling oil. ("Oil in History" from "The Beginnings of Oil in the United States")

5. Why did Patillo Higgins suspect that he would find oil in the small hill outside of Beaumont, Texas?

He knew natural gas could be found in the hill and that natural gas and oil (both fossil fules) are often found together. ("Oil in History" from "The Beginnings of Oil in the United States")

6. What problem was Jim Hamill hired to solve? How did he solve it?

Jim Hamill was hired to help drill a hole deep enough to extract the oil. He used a rotary drill instead of a chisel drill to dig through the sandy ground. ("Oil in History" from "The Beginnings of Oil in the United States")

Activity Page **3.1**

NAME: _____

DATE: _____

7. Why was the rotary drill a successful tool at Spindletop?

A rotary drill cut through the sand instead of compacting it like a chisel drill. ("Spindletop Hill" section of "The Beginnings of Oil in the United States")

8. How did adding mud to the hole help the crew dig?

The mud helped to carry the sand out of the hole instead of the sand falling back in when the drill bit was removed. ("The First Attempts" section of "Spindletop Gusher")

9. Success at the oil well also created some problems. What problems were created after the oil well blew out?

Flammable fumes made the area prone to fire.

The oil ran into streams and covered the animals, trees, and houses in the area.

Oil and fumes in the air made it difficult for the crew to work due to a lack of fresh air. ("A New Era" section of "Spindletop Gusher")

10. What were the crew's solutions to those problems?

A barrier of dirt was dug to contain the flow of oil.

The ground was plowed to remove the flammable dirt.

A risky but effective system of valves and pipes were built by the workers. ("A New Era" section of "Spindletop Gusher")

NAME: _____

DATE: _____

3.4 Activity Page

Label the Argumentative Essay

Directions: Read the argumentative essay below. Label each paragraph with the correct part of the essay. Use the model on Activity Page 3.2 that you labeled in class to help you.

Introduction

Getting a pet is a big decision. Which kind of animal to get is an easy decision. Dogs make the best pets for anyone who wants an animal pal.

Claim statement

Details defending the claim

Dogs come in many sizes, shapes, and personalities. There is a dog for every person. Not only will they give you endless love and companionship, they are fun! Dogs can learn all kinds of tricks. Having a dog will also make you healthier because you will exercise each time they need a walk.

Body paragraphs

Lots of parents try to say that a dog is not a good idea for a pet. They say that it is too big. Well, good news! Some dog breeds are so small they can fit in a purse. Allergies are another worry. There are breeds of dog that have hair instead of fur and are great for people who get the sniffles from other furry pets, like cats.

Another reason why dogs make such great pets is because they are loyal. A dog is often referred to as 'man's best friend' and will love their owner no matter what. While some breeds might be more loyal than others, dogs won't hold it against you if you feed them late or are away from home longer than you planned. Dogs and their owners bond and develop a loyal relationship

Conclusion

If you want to be happy and healthy, you should get a dog. You will take plenty of walks and get a ton of cuddles every day. Dogs are by far the best pets.

Claim restated

NAME: _____

DATE: _____

4.1 Activity Page

"Big Changes"

Directions: Read "Big Changes." Complete the chart below to retell some of the causes and effects discussed in the text.

Cause	Effect
Men had the chance to earn double the pay earned by workers in the rest of the country.	Many men seeking employment arrived in Beaumont.
There was not enough housing for the 41,000 new people in Beaumont.	Businesses that were not normally used for housing allowed workers to spend the night.
There was not enough fresh water.	People became ill from drinking dirty water.
There were not enough doctors.	There was little medical attention.
Flammable fumes were in the air.	Fires broke out often.
Many people came to the area for opportunities to make money.	New towns were formed around the well excavations.

State a Claim

The oil boom created both problems and innovations. Overall, was the boom in Beaumont a positive experience for the town?

Answers may vary but should include a clear claim statement with supporting evidence from the text.

NAME: _____

DATE: _____

5.1 Activity Page

"Innovations to Fuel"

Directions: Read "Innovations to Fuel" and consider the challenges being faced by the new oil industry. Using the chart below, record how the problems occurred and the innovative solutions that solved them. Use the example to help you.

Problem		Solution
Cause	Effect	Claim
A large amount of oil gushed from the ground.	*Oil flooded the area and caused hazardous conditions.*	*The workers created a pipe with a valve to cap the oil well.*
Answers will vary but should include 1-3 additional entries in each column.		

Think About It

Read the question carefully. Then write your answer.

What is the main message of paragraphs 9 through 11?

Support your answer with evidence from the article.

Answers may vary but should include information about transportation.

NAME: _____

DATE: _____

5.2 Activity Page

Primary and Secondary Sources

When researchers are collecting information, they often use primary sources. A primary source comes from a person who knows about a topic firsthand. These sources provide information from the time period of the event. They are useful because they provide evidence left by eyewitnesses or people who lived at the time.

Secondary sources, like books and articles, are created using information from primary sources. These sources are useful because they are easy to find.

Information or Event → Primary Source 1 → Secondary Source 2

Primary sources are ONE step away from the information or event.

Secondary sources are TWO steps away from the information or event.

Practice

Show whether a resource is primary or secondary by circling the correct term.

Encyclopedia	Primary Source / (Secondary Source)
Blog written by an eyewitness	(Primary Source) Secondary Source
News website	Primary Source / (Secondary Source)
Journal entry	(Primary Source) Secondary Source
Interview	(Primary Source) Secondary Source
Photograph	(Primary Source) Secondary Source

Try It Out!

One method to collect primary source information is through interviews. Think about who may know about the topic you are researching. Write your interview questions below.

1. _____
2. _____
3. _____

NAME: _____

DATE: _____

5.3 Activity Page

Conduct an Interview

Directions:

1. Write your questions from Activity Page 5.2 on the lines below.
2. Pick a person to interview. This can be a classmate or an adult.
3. Ask your questions one at a time. Remember to speak slowly and clearly.
4. Write down your subject's answers beside the question. It is fine to ask your subject to repeat something or add more details to help you understand.

Question 1:	Answer:
Question 2:	
Question 3:	Answer:

Answers may vary.

NAME: _____

DATE: _____

6.1 Activity Page

Oil Workers

Comparing Oil Workers of Spindletop to the Oil Workers of Today

1. Answer each question in both columns. Remember to support your answer.

	Spindletop Workers	Modern Oil Workers
Where do oil workers do their job?		
How is oil extracted from the ground?		
What are the dangers of working near an oil well?		

Answers may vary but should include information from the correct text to support answers.

2. What else did you learn about modern oil workers that you did not include above? Share at least three more pieces of information.

- _____
- _____
- _____
- _____

NAME: _____

DATE: _____

6.2 Activity Page

Plan for Writing and Research

Directions: Identify the hook and claim you wrote in your introductory paragraph. Then brainstorm a plan for writing your two or three body paragraphs. First, identify the main reasons that defend your claim. Then, identify the text evidence from "Texas Energy: Variety Is the Spice of Life" that you will use. After you identify text evidence, complete the "Explanation of Evidence" boxes. Write your ideas as a bulleted list, not in complete sentences. When you finish all of your body paragraphs, create a plan for your conclusion paragraph.

Paragraph	Plan for Writing
Introduction Paragraph	Hook:
	Claim:
Body Paragraph 1	Topic Sentence with Reason 1:
	Evidence from "Texas Energy: Variety Is the Spice of Life":
	Explanation of Evidence:

Answers may vary.

Activity Page **6.2**

NAME: _____

DATE: _____

Paragraph	Plan for Writing
Body Paragraph 2	Topic Sentence with Reason 2:
	Evidence from "Texas Energy: Variety Is the Spice of Life":
	Explanation of Evidence:
Body Paragraph 3	Topic Sentence with Reason 3:
	Evidence from "Texas Energy: Variety Is the Spice of Life":
	Explanation of Evidence:

Answers may vary.

NAME: _____

DATE: _____

6.2 Activity Page

Paragraph	Plan for Writing
Conclusion Paragraph	Summary of Main Ideas:
	Restate Claim:
	Memorable Last Sentence:

Directions: Revisit your research to consider how it could be used to explain your evidence. Write your ideas in a bulleted list, not in complete sentences. If needed, conduct additional research that can be used as background knowledge when you write the explanation of the evidence portion of your body paragraphs.

Answers may vary.

NAME: _____

DATE: _____

7.1 Activity Page

Research Questions

Directions: Use the space below to record possible research questions before beginning your independent research. While reading your selected research materials, continue writing questions for further research. After reading, write at least one question that you would like to research further.

Research Questions:

- _____
- _____
- _____ *Answers may vary but should be written legibly in cursive.* _____
- _____
- _____
- _____
- _____
- _____
- _____

NAME: _____

DATE: _____

7.2 Activity Page

Independent Research

Directions: Use the space below to record notes on the questions you chose to research.

	Energy Type:	Energy Type:	Energy Type:
Research Question:	**Text Evidence:** Sou	**Text Evidence:**	**Text Evidence:**
Research Question:	Text Sou		
Research Question:	**Text Evidence:** **Source:**	**Text Evidence:** **Source:**	**Text Evidence:** **Source:**

Answers may vary but should be written legibly in cursive.

NAME: _____

DATE: _____

8.1 Activity Page

T-Chart Notes
"Nuclear Energy"

Directions: Use the following T-chart to take notes as you read "Nuclear Energy."

Central Idea	Details
How Nuclear Energy Works	• Uranium atoms are split in nuclear reactors. • The energy created is used to heat water until it becomes steam. • The steam is used to spin turbines. • As these turbines spin, they generate electricity. Once produced, this electricity is stored and eventually sent out.
Disadvantages	• Environmental risks make the cost of creating nuclear plants more expensive. • The nuclear fission process produces radioactive waste, which is harmful to our bodies and the environment. • The process of transporting the waste can be dangerous. • The costs to build, run, and keep nuclear power plants safe are high.
Discovery	• During the early 1900s, Albert Einstein proposed the equation E=mc to explain how energy and mass relate to one another. • In 1942, scientists under the codename "Manhattan Project" succeeded in splitting the atom. • In 1976, the Texas Research Foundation utilized nuclear energy to develop fertilizers to help plants grow quicker and stronger. • Hyman J. Rickover's work led to the first nuclear-powered vessels.
Power Plants	• The United States operates nearly 100 nuclear reactors, the largest number in the world. • These reactors produce about twenty percent of the country's electricity, the equivalent of powering one out of every five buildings. • Many nations look to American procedures and protocols as the gold standard for safely harnessing nuclear energy. • Texas is home to two major nuclear power facilities: the Comanche Peak plant on Glen Rose and the south Texas Project plant in Bay City.
Why Use Nuclear Energy?	• Nuclear power requires less land to generate 1,000 MW of power. • Environmental risks make the cost of creating nuclear plants more expensive. • Nuclear power plants generate a lot of energy and don't pollute the air. • The reliability of these Texan nuclear plants is unparalleled. • Nuclear plants are engineered to withstand tornadoes, hurricanes, and earthquakes. • Nuclear energy helps create jobs.
Future	• Nuclear energy is clean, powerful, and reliable. • The production of nuclear energy helps Texas make its own electricity. • As technology progresses, producing nuclear energy will only become cheaper, easier, and safer. • Smaller, modular reactors utilize waste from larger facilities.

NAME: _____

DATE: _____

8.2 Activity Page

Sequence Transition Words

first	third	then	last
second	next	finally	afterward

Directions:

Part 1: Rewrite the steps needed to turn the sun's energy into energy people can use. In each sentence, begin with a transition word from the word bank above. Use the text "Nuclear Energy" and your notes from the T-chart on Activity Page 8.1, to help you.

Answers may vary but should include:

- *a logical sequence of steps.*
- *a transition word from the word bank at the start of each step.*
- *transition words used in a logical order (for example, then should not be used.)*

Activity Page **8.2**

NAME: _____

DATE: _____

Part 2: Rewrite your sentences as directed by your teacher. Mix up the order of your sentences and exchange them with a partner. Can you put your partner's sentences back in the right order, using their transition words?

Students may write their sentences on this page and cut them apart or use another material, such as stick notes or notecards.

Sentences that have been rearranged into the correct order should match the original order created by the student's partner. Correct any errors made, as needed.

NAME: _____

DATE: _____

8.3 Activity Page

Scoring a Sample Writing

Directions: Read the response to the prompt. Based on the rubric, determine an overall score for the short writing sample.

Prompt: "How are innovations in nuclear energy making it more affordable for Americans?"

Overall Score: 2

~~Nuclear energy is a renewable resource that is becoming more affordable. Since its discovery, researchers and scientists have utilized nuclear energy in new innovations. These innovations have impacted people in their daily lives. For example,~~ potential nuclear power plants that are built smaller will reduce the cost and waste of traditional nuclear power plants. This is important since the demand for electricity is particularly high, especially in Texas. Admiral Hyman G. Rickover created ships and submarines for the American navy that ran with nuclear energy. This saved fuel costs for the American government. Overall, innovations in nuclear energy have had and continue to have a positive economic impact on Americans.

NAME: _____

DATE: _____

9.1 Activity Page

T-Chart Notes
"Solar, Wind, and Batteries"

Directions: Use the T-chart below to take notes as you read "Solar, Wind, and Batteries."

Central Idea	Details
Solar Energy	• *Solar energy is a renewable source of energy.* • *It turns the sun's rays into electricity with solar panels.* • *Most solar panels are made up of many photovoltaic (PV) cells. Elements for solar panels are mined, which is expensive and time consuming.* • *Solar panels need to be placed out on the open to get lots of sunlight.* • *Solar energy can be saved and stored in batteries.* • *The use of solar power helps Texas to be energy- independent.*
Wind Energy	• *Wind energy is a renewable source of energy.* • *Windmills were once used to grind grain or pump water.* • *Wind turbines capture the wind's energy and turn it into electricity with the use of a generator.* • *Wind turbines are 300 feet tall and work best in remote places where the wind can blow unobstructed.* • *Texas led the nation in wind-powered electricity in 2022.* • *Advantages are that the cost to operate is low, and it creates jobs.* • *Disadvantages of wind turbines are that they are big, loud, and dangerous to birds and bats. Energy can lack during transmission.*
Batteries	• *Renewable energy needs batteries because solar and wind energy are unreliable.* • *Batteries are devices that can store and release energy.* • *To make batteries, we have to mine for special metals. Mining involves many shifts to the earth, including the movement of dirt and use of water.* • *Tesla has a massive battery-making factory in Austin called Giga Texas.* • *The University of Texas at Austin's Energy Institute has more than 300 people looking at how to make batteries better.*
Future	• *Renewable energy in Texas is not limited to electricity but includes education, jobs, and the environment.* • *Texas strives to harness the powers of nature by using its natural resources wisely, reducing waste, and keeping Texas energy- independent.* • *Solar panels need to be placed out on the open to get lots of sunlight.* • *Solar energy can be saved and stored in batteries.* • *The use of solar power helps Texas to be energy-independent.*

NAME: _____

DATE: _____

9.2 Activity Page

Comparing Wind and Solar Renewable Energy Sources

Directions: Complete the chart below with information from the article.

Central Idea	Pros	Cons
Solar Energy	• Solar energy is a renewable resource that will not expire or run out. • If Solar panels turn the sun's rays into electricity. • Solar energy can be saved and stored in batteries. • Solar power does not release as many pollutants into the air. • The use of solar power helps Texas to be energy-independent.	• Most people cannot afford to buy solar panels. • Elements for solar panels are mined, which is expensive and time-consuming. • Solar panels need to be placed out in the open to get lots of sunlight. • Energy is intermittent. • Battery storage is still an issue.
Wind Energy	• Wind energy is a renewable source of energy that is clean. • Wind turbines capture the wind's energy and turn it into electricity with the use of a generator. • Wind energy can be saved and stored in batteries. • The cost to operate is low, and it creates jobs.	• Wind turbines are 300 feet tall and work best on remote places where the wind can blow unobstructed. • They are loud. • They are dangerous to birds and bats. • Energy is intermittent. • Battery storage is still an issue.

NAME: _____

DATE: _____

9.3 Activity Page

Research Questions

Directions: Use the space below to record possible research questions for your independent research. What else do you want to know about energy sources? What do you still need to know to support your claims?

Research Questions:

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

Answers may vary but should be written legibly in cursive.

NAME: _____

DATE: _____

9.4 Activity Page

Independent Research

Directions: Use the space below to record notes on the questions you chose to research.

	Energy Type:	Energy Type:	Energy Type:
Research Question:	**Text Evidence:** **Sou**	**Text Evidence:**	**Text Evidence:**
Research Question:	**Text** **Sou**		
Research Question:	**Text Evidence:** **Source:**	**Text Evidence:** **Source:**	**Text Evidence:** **Source:**

Answers may vary but should be written legibly in cursive.

NAME: _____

DATE: _____

10.1 Activity Page

"Solar, Wind, and Batteries" Claim, Reasons, and Evidence

Directions: Identify the claims, reasons, and evidence in Part 2 of "Solar, Wind, and Batteries."

Claim

Americans should follow Texas and make the shift to using renewable energy sources.

Reasons	Evidence
Doing so will help us rely on a source of power that doesn't run out.	• The sun shines everywhere on Earth. • Any place the sun touches, even in very cold places, people could harness solar energy to make electricity. • Anywhere that the wind blows an average of nine miles per hour (mph), people can transform wind energy into electricity. • According to the U.S. Energy Information Administration, nearly every state has enough wind to build wind turbines.
In the process, it will create jobs.	• The Solar Foundation reported that Texas had over ten thousand solar jobs in 2020. • The Solar Energy Industries Associated reported in 2022 that over 208 solar companies exist in Texas. • According to the U.S. Department of Energy, in 2023, over three hundred thousand new jobs were created in the field of renewable energy. • Furthermore, the American Wind Energy Association reported that Texas had over twenty-five thousand wind-related jobs in 2020.
The complaint against the location of solar panels and wind turbines does not stand up against the promise of new technologies and partnerships.	• However, new solar panels are designed to reduce the impact of shade. They also can generate electricity during light snow. • They are being built taller to generate more power. This reduces the need for as many turbines in one area, improving the way they look and sound. • In addition to these improvements, batteries make solar and wind power more reliable.

NAME: _____
DATE: _____

10.2 Activity Page

Body Paragraph

Prompt: Texas benefits from a diversified energy industry that harnesses the potential of its variety of natural resources. Argue which of the following factors is more important to the diversity of the Texas energy industry: the variety of natural resources Texas has available or innovating to harness the potential of those resources.

Claim: _____

Directions: Use your notes to write a body paragraph supporting your claim.

Answers may vary but should include a clear claim statement with supporting evidence from the text and be written in cursive.

NAME: _____
DATE: _____

11.1 Activity Page

"Houston: Balancing Energy, the Environment, and the Economy" Analysis Activity

Directions: Answer the questions below for the article "Houston: Balancing Energy, the Environment, and the Economy" located in the Reader. Remember to support your answer with details from the text.

1. What is the central idea or claim the article is making?

Houston has a reputation as a place for innovators, especially those who work to balance energy production and the environment.

2. Why did leaders of the city of Houston want to produce their own energy?

It has high energy needs. As the fourth-largest city in the United States, Houston needs a lot of energy. The Port of Houston is one of the busiest ports in the world. It alone requires vast amounts of energy.

3. How do the innovations that the city of Houston is making help the city's economy?

Many of the companies located in the Energy Corridor sponsor environmental activities in the city, such as planting trees and protecting local wildlife. The district also attracts people interested in joining the energy field. Thousands of Texans are able to find employment due to the energy sector.

4. How do the innovations that the city of Houston is making help the environment?

Green spaces, where plants reduce the impacts of pollution, have been built all over the city. In 2002, the city also began a new green transportation plan where they began to use plug-in hybrid electric vehicles in order to keep the air cleaner. In 2008, solar panels were installed on many city buildings. Houston's leaders have set goals to balance the production of energy with protecting nature at the same time. Improvements to energy production creates jobs and helps make renewable energy more efficient.

NAME: _____
DATE: _____

11.2 Activity Page

Write Your Argumentative Essay

Checklist	Completed?
Introduction: State the claim.	☐
Two or Three Body Paragraphs: Defend the claim.	☐ ☐ ☐
Conclusion: Restate the claim.	☐

Answers may vary but should be written legibly in cursive.

NAME: _____
DATE: _____

12.1 Activity Page

The Boy Who Harnessed the Wind

Directions: Explore the challenge faced by William in his village. Complete the chart below by answering the questions in each box.

Problem: What problem does the village face?

Drought

Cause: What caused this problem?	Effect: What effects does this have on the village?
Drought	**Food scarcity**

Claim: What does William believe will fix the problem?	What challenges does he face?
Creating his own energy useing a windmill.	• **Finding materials** • **Learning to build the windmill** • **Doubt from community**

Solution: How is the problem solved?

William perseveres and teaches himself how to build the windmill. He got help from friends and family.

Think About It:
How does a wind turbine work? Can any be found in Texas? Use your research skills to find out!

Answers may vary.

NAME: _____

DATE: _____

PP.1 Activity Page

Grammar Practice

Directions: Fill in the blank with the past-tense form of the verb in parenthesis.

1. My family *went* to Palo Duro Canyon on vacation. *(go)*
2. We *drove* there from Dallas. *(drive)*
3. We *saw* a show at the amphitheater. *(see)*
4. My legs *shook* after our long hike. *(shake)*

Directions: Fill in the blanks with the correct adverbs from the word bank.

always	rarely	almost

5. I *almost* finished my homework, but I forgot to answer the last question.
6. I was very excited when my mom bought candy because she *rarely* buys it.
7. The sun *always* comes out again after a storm.

Directions: Revise each sentence for clarity by adding a prepositional phrase.

8. There is a field of bluebonnets *next to the barn*.
9. We passed a large oil refinery *near Beaumont*.
10. Antonio went to the rodeo *in Houston*.

NAME: _____

DATE: _____

PP.2 Activity Page

Research Guide

Directions: You have been hired to write a guide for conducting research. In your guide, you should explain the process of conducting research, including how to identify questions for research, types of sources, and strategies for note-taking. Once you have finished writing, you can cut the pages out and staple or glue them together on the left side of each page to create a booklet.

Answers may vary.

Design your cover.

Activity Page **PP.2**

NAME: _____

DATE: _____

	Types of Resources:	Strategies for Note-Taking:
	☐	☐
	Answers may vary but should be written legibly in cursive.	

	How to Identify Questions for Research

NAME: _____

DATE: _____

PP.3 Activity Page

Parts of an Argumentative Essay

Part A: Read the prompts below. Determine which prompt leads to an argumentative essay and explain your reasoning.

Prompt 1:	Prompt 2:
Describe your favorite recreational activity in which you participate. Include how often you do it, when and where you do it, and why you do it.	Which recreational activity has the most benefits: exercising or reading? Clearly state your answer and support it with evidence.

Prompt 2 leads to an argumentative essay because it suggests the claim that one activity has more benefits than the other and requires evidence to support that claim.

Part B: Write an argumentative essay in response to the prompt you answered for Part A.

Student responses may warn but should have a claim with evidence that clearly supports that claim. Student responses should be written legibly in cursive.

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS—GRADE 4

Unit 9		Correlation—Teacher's Guide
(1) Developing and sustaining foundational language skills: listening, speaking, discussion, and thinking—oral language. The student develops oral language through listening, speaking, and discussion. The student is expected to:		
TEKS 4.1.A	listen actively, ask relevant questions to clarify information, and make pertinent comments	p. 6, p. 10, p. 11
TEKS 4.1.B	follow, restate, and give oral instructions that involve a series of related sequences of action	
TEKS 4.1.C	express an opinion supported by accurate information, employing eye contact, speaking rate, volume, and enunciation, and the conventions of language to communicate ideas effectively	p. 6, p. 10, p. 11
TEKS 4.1.D	work collaboratively with others to develop a plan of shared responsibilities	
(2) Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking—beginning reading and writing. The student develops word structure knowledge through phonological awareness, print concepts, phonics, and morphology to communicate, decode, and spell. The student is expected to:		
(A) demonstrate and apply phonetic knowledge by:		
TEKS 4.2.A.i	decoding words with specific orthographic patterns and rules, including regular and irregular plurals	
TEKS 4.2.A.ii	decoding multisyllabic words with closed syllables, open syllables, VCe syllables, vowel teams, including digraphs and diphthongs, r-controlled syllables, and final stable syllables	
TEKS 4.2.A.iii	decoding words using advanced knowledge of syllable division patterns such as VV	
TEKS 4.2.A.iv	decoding words using knowledge of prefixes	
TEKS 4.2.A.v	decoding words using knowledge of suffixes, including how they can change base words such as dropping e, changing y to i, and doubling final consonants	
TEKS 4.2.A.vi	identifying and reading high-frequency words from a research-based list	
(B) demonstrate and apply spelling knowledge by:		
TEKS 4.2.B.i	spelling multisyllabic words with closed syllables, open syllables, VCe syllables, vowel teams, including digraphs and diphthongs, r-controlled syllables, and final stable syllables	
TEKS 4.2.B.ii	spelling homophones	
TEKS 4.2.B.iii	spelling multisyllabic words with multiple sound-spelling patterns	
TEKS 4.2.B.iv	spelling words using advanced knowledge of syllable division patterns	
TEKS 4.2.B.v	spelling words using knowledge of prefixes	
TEKS 4.2.B.vi	spelling words using knowledge of suffixes, including how they can change base words such as dropping e, changing y to i, and doubling final consonants	

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS—GRADE 4

Unit 9		Correlation—Teacher's Guide
TEKS 4.2.C	write legibly in cursive to complete assignments	p. 3, p. 6, p. 16, p. 20, p. 29, p. 32, p. 36, p. 46, p. 54, p. 56, p. 60, p. 64, p. 68, p. 73, p. 80, p. 92, p. 96, p. 104, p. 108, p. 114, p. 116, p. 123, p. 126, p. 132, p. 136, p. 141, p. 144, p. 147, p. 150, p. 153
(3) Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking—vocabulary. The student uses newly acquired vocabulary expressively. The student is expected to:		
TEKS 4.3.A	use print or digital resources to determine meaning, syllabication, and pronunciation	
TEKS 4.3.B	use context within and beyond a sentence to determine the relevant meaning of unfamiliar words or multiple-meaning words	
TEKS 4.3.C	determine the meaning of and use words with affixes such as *mis-, sub-, -ment,* and *-ity/ty* and roots such as auto, graph, and meter	
TEKS 4.3.D	identify, use, and explain the meaning of homophones such as reign/rain	
(4) Developing and sustaining foundational language skills: listening, speaking, reading, writing, and thinking—fluency. The student reads grade-level text with fluency and comprehension. The student is expected to use appropriate fluency (rate, accuracy, and prosody) when reading grade-level text.		
TEKS 4.4.A	use appropriate fluency (rate, accuracy, and prosody) when reading grade-level text	
(5) Developing and sustaining foundational language skills: listening, speaking, reading, writing , and thinking—self-sustained reading. The student reads grade-appropriate texts independently. The student is expected to self-select text and read independently for a sustained period of time.		
TEKS 4.5.A	self-select text and read independently for a sustained period of time	
(6) Comprehension skills: listening, speaking, reading, writing, and thinking using multiple texts. The student uses metacognitive skills to both develop and deepen comprehension of increasingly complex texts. The student is expected to:		
TEKS 4.6.A	establish purpose for reading assigned and self-selected texts	
TEKS 4.6.B	generate questions about text before, during, and after reading to deepen understanding and gain information	
TEKS 4.6.C	make, correct, or confirm predictions using text features, characteristics of genre, and structures	p. 11, p. 52, p. 56
TEKS 4.6.D	create mental images to deepen understanding	p. 20, p. 24
TEKS 4.6.E	make connections to personal experiences, ideas in other texts, and society	p. 68, p. 72
TEKS 4.6.F	make inferences and use evidence to support understanding	p. 56, p. 60
TEKS 4.6.G	evaluate details read to determine key ideas	p. 32, p. 36, p. 108, p. 112, p. 113
TEKS 4.6.H	synthesize information to create new understanding	p. 20, p. 24, p. 46, p. 50, p. 80, p. 84, p. 126, p. 130

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS—GRADE 4

Unit 9		Correlation—Teacher's Guide
TEKS 4.6.I	monitor comprehension and make adjustments such as re-reading, using background knowledge, asking questions, and annotating when understanding breaks down	
(7) Response skills: listening, speaking, reading, writing, and thinking using multiple texts. The student responds to an increasingly challenging variety of sources that are read, heard, or viewed. The student is expected to:		
TEKS 4.7.A	describe personal connections to a variety of sources including self-selected texts	
TEKS 4.7.B	write responses that demonstrate understanding of texts, including comparing and contrasting ideas across a variety of sources	p. 108, p. 112, p. 113
TEKS 4.7.C	use text evidence to support an appropriate response	
TEKS 4.7.D	retell, paraphrase or summarize texts in ways that maintain meaning and logical order	
TEKS 4.7.E	interact with sources in meaningful ways such as notetaking, annotating, freewriting, or illustrating	p. 56, p. 64, p. 68, p. 73
TEKS 4.7.F	Use newly acquired vocabulary as appropriate	
TEKS 4.7.G	discuss specific ideas in the text that are important to the meaning	
(8) Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts—literary elements. The student recognizes and analyzes literary elements within and across increasingly complex traditional, contemporary, classical, and diverse literary texts. The student is expected to:		
TEKS 4.8.A	infer basic themes supported by text evidence	
TEKS 4.8.B	explain the interactions of the characters and the changes they undergo	
TEKS 4.8.C	analyze plot elements, including the rising action, climax, falling action, and resolution	p. 136, p. 139
TEKS 4.8.D	explain the influence of the setting, including historical and cultural settings, on the plot	p. 136, p. 139
(9) Multiple genres: listening, speaking, reading, writing, and thinking using multiple texts—genres. The student recognizes and analyzes genre-specific characteristics, structures, and purposes within and across increasingly complex traditional, contemporary, classical, and diverse texts. The student is expected to:		
TEKS 4.9.A	demonstrate knowledge of distinguishing characteristics of well-known children's literature such as folktales, fables, legends, myths, and tall tales	
TEKS 4.9.B	explain figurative language such as simile, metaphor, and personification that the poet uses to create images	

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS—GRADE 4

Unit 9		Correlation—Teacher's Guide
TEKS 4.9.C	explain structure in drama such as character tags, acts, scenes, and stage directions	
(D) recognize characteristics and structures of informational text, including:		
TEKS 4.9.D.i	the central idea with supporting evidence	p. 96, p. 100
TEKS 4.9.D.ii	features such as pronunciation guides and diagrams to support understanding	
TEKS 4.9.D.iii	organizational patterns such as compare and contrast	p. 108, p. 112, p. 113
(E) recognize characteristics and structures of argumentative text by:		
TEKS 4.9.E.i	identifying the claim	p. 20, p. 29, p. 108, p. 112, p. 116, p. 120
TEKS 4.9.E.ii	explaining how the author has used facts for an argument	p. 20, p. 29, p. 32, p. 40, p. 112, p. 116, p. 120
TEKS 4.9.E.iii	identifying the intended audience or reader	p. 112, p. 116, p. 120
TEKS 4.9.F	recognize characteristics of multimodal and digital texts	p. 136, p. 144, p. 147
(10) Author's purpose and craft: listening, speaking, reading, writing, and thinking using multiple texts. The student uses critical inquiry to analyze the authors' choices and how they influence and communicate meaning within a variety of texts. The student analyzes and applies author's craft purposefully in order to develop their own products and performances. The student is expected to:		
TEKS 4.10.A	explain the author's purpose and message within a text	
TEKS 4.10.B	explain how the use of text structure contributes to the author's purpose	p. 46, p. 50
TEKS 4.10.C	analyze the author's use of print and graphic features to achieve specific purposes	
TEKS 4.10.D	describe how the author's use of imagery, literal and figurative language such as simile and metaphor, and sound devices such as alliteration and assonance achieves specific purposes	
TEKS 4.10.E	identify and understand the use of literary devices, including first- or third-person point of view;	
TEKS 4.10.F	discuss how the author's use of language contributes to voice	
TEKS 4.10.G	identify and explain the use of anecdote	
(11) Composition: listening, speaking, reading, writing, and thinking using multiple texts—writing process. The student uses the writing process recursively to compose multiple texts that are legible and uses appropriate conventions. The student is expected to:		
TEKS 4.11.A	plan a first draft by selecting a genre for a particular topic, purpose, and audience using a range of strategies such as brainstorming, freewriting, and mapping	p. 6, p. 16, p. 46, p. 54
(B) develop drafts into a focused, structured, and coherent piece of writing by:		
TEKS 4.11.B.i	organizing with purposeful structure, including an introduction, transitions, and a conclusion	p. 96, p. 104, p. 108, p. 114, p. 116, p. 123, p. 126, p. 132

TEXAS ESSENTIAL KNOWLEDGE AND SKILLS—GRADE 4

Unit 9		Correlation—Teacher's Guide
TEKS 4.11.B.ii	developing an engaging idea with relevant details	p. 32, p. 40
TEKS 4.11.C	revise drafts to improve sentence structure and word choice by adding, deleting, combining, and rearranging ideas for coherence and clarity	p. 116, p. 123, p. 136, p. 141, p. 144, p. 147
(D) edit drafts using standard English conventions, including:		
TEKS 4.11.D	edit drafts using standard English conventions	p. 46, p. 54, p. 136, p. 141, p. 144, p. 147, p. 148
TEKS 4.11.D.i	complete simple and compound sentences with subject-verb agreement and avoidance of splices, run-ons, and fragments	p. 116, p. 123
TEKS 4.11.D.ii	past tense of irregular verbs	p. 46, p. 54, p. 136, p. 141, p. 144, p. 147
TEKS 4.11.D.iii	singular, plural, common, and proper nouns	
TEKS 4.11.D.iv	adjectives, including their comparative and superlative forms	
TEKS 4.11.D.v	adverbs that convey frequency and adverbs that convey degree	p. 46, p. 54 , p. 136, p. 141, p. 144, p. 147
TEKS 4.11.D.vi	prepositions and prepositional phrases	p. 136, p. 141, p. 144, p. 147
TEKS 4.11.D.vii	pronouns, including reflexive	
TEKS 4.11.D.viii	coordinating conjunctions to form compound subjects, predicates, and sentences	
TEKS 4.11.D.ix	capitalization of historical periods, events and documents; titles of books; stories and essays; and languages, races, and nationalities	
TEKS 4.11.D.x	punctuation marks including apostrophes in possessives, commas in compound sentences, and quotation marks in dialogue	
TEKS 4.11.D.xi	correct spelling of words with grade appropriate orthographic patterns and rules and high-frequency words	
TEKS 4.11.E	publish written work for appropriate audiences	p. 150, p. 152
(12) Composition: listening, speaking, reading, writing, and thinking using multiple texts—genres. The student uses genre characteristics and craft to compose multiple texts that are meaningful. The student is expected to:		
TEKS 4.12.A	compose literary texts such as personal narratives and poetry using genre characteristics and craft	
TEKS 4.12.B	compose informational texts, including brief compositions that convey information about a topic, using a clear central idea and genre characteristics and craft	
TEKS 4.12.C	compose argumentative texts, including opinion essays, using genre characteristics and craft	p. 20, p. 29

TEXAS ESSENTIAL KNOWLEDGE AND STANDARDS—GRADE 4

Unit 9		Correlation—Teacher's Guide
TEKS 4.12.D	compose correspondence that requests information	
(13) Inquiry and research: listening, speaking, reading, writing, and thinking using multiple texts. The student engages in both short-term and sustained recursive inquiry processes for a variety of purposes. The student is expected to:		
TEKS 4.13.A	generate and clarify questions on a topic for formal and informal inquiry	p. 80, p. 92, p. 114
TEKS 4.13.B	develop and follow a research plan with adult assistance	
TEKS 4.13.C	identify and gather relevant information from a variety of sources	p. 108
TEKS 4.13.D	Identify primary and secondary sources	p. 56, p. 64, p. 68
TEKS 4.13.E	demonstrate understanding of information gathered	
TEKS 4.13.F	recognize the difference between paraphrasing and plagiarism when using source materials	
TEKS 4.13.G	develop a bibliography	
TEKS 4.13.H	use an appropriate mode of delivery, whether written, oral, or multimodal, to present results	p. 150, p. 153

ENGLISH LANGUAGE PROFICIENCY STANDARDS—GRADE 4

Unit 9		Correlation—Teacher's Guide
(1) Cross-curricular second language acquisition/learning strategies. The ELL uses language learning strategies to develop an awareness of their own learning processes in all content areas. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
ELPS 1.A	use prior knowledge and experiences to understand meanings in English	p. 63, p. 72, p. 139
ELPS 1.B	monitor oral and written language production and employ self-corrective techniques or other resources	p. 55, p. 72, p. 154
ELPS 1.C	use strategic learning techniques such as concept mapping, drawing, memorizing, comparing, contrasting, and reviewing to acquire basic and grade-level vocabulary	p. 29, p. 55, p. 63, p. 66, p. 148, p. 149
ELPS 1.D	speak using learning strategies such as requesting assistance, employing non-verbal cues, and using synonyms and circumlocution (conveying ideas by defining or describing when exact English words are not known)	p. 133
ELPS 1.E	internalize new basic and academic language by using and reusing it in meaningful ways in speaking and writing activities that build concept and language attainment	p. 30, p. 66, p. 105
ELPS 1.F	use accessible language and learn new and essential language in the process	p. 18, p. 29, p. 133
ELPS 1.G	demonstrate an increasing ability to distinguish between formal and informal English and an increasing knowledge of when to use each one commensurate with grade-level learning expectations	
ELPS 1.H	develop and expand repertoire of learning strategies such as reasoning inductively or deductively, looking for patterns in language, and analyzing sayings and expressions commensurate with grade-level learning expectations	p. 93
(2) Cross-curricular second language acquisition/listening. The ELL listens to a variety of speakers including teachers, peers, and electronic media to gain an increasing level of comprehension of newly acquired language in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in listening. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
ELPS 2.A	distinguish sounds and intonation patterns of English with increasing ease	

ENGLISH LANGUAGE PROFICIENCY STANDARDS—GRADE 4

Unit 9		Correlation—Teacher's Guide
ELPS 2.B	recognize elements of the English sound system in newly acquired vocabulary such as long and short vowels, silent letters, and consonant clusters	
ELPS 2.C	learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions	
ELPS 2.D	monitor understanding of spoken language during classroom instruction and interactions and seek clarification as needed	
ELPS 2.E	use visual, contextual, and linguistic support to enhance and confirm understanding of increasingly complex and elaborated spoken language	p. 15, p. 18, p. 92, p. 105
ELPS 2.F	listen to and derive meaning from a variety of media such as audio tape, video, DVD, and CD ROM to build and reinforce concept and language attainment	
ELPS 2.G	understand the general meaning, main points, and important details of spoken language ranging from situations in which topics, language, and contexts are familiar to unfamiliar	
ELPS 2.H	understand implicit ideas and information in increasingly complex spoken language commensurate with grade-level learning expectations	
ELPS 2.I	demonstrate listening comprehension of increasingly complex spoken English by following directions, retelling or summarizing spoken messages, responding to questions and requests, collaborating with peers, and taking notes commensurate with content and grade-level needs	
(3) Cross-curricular second language acquisition/speaking. The ELL speaks in a variety of modes for a variety of purposes with an awareness of different language registers (formal/informal) using vocabulary with increasing fluency and accuracy in language arts and all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in speaking. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. The student is expected to:		
ELPS 3.A	practice producing sounds of newly acquired vocabulary such as long and short vowels, silent letters, and consonant clusters to pronounce English words in a manner that is increasingly comprehensible	
ELPS 3.B	expand and internalize initial English vocabulary by learning and using high-frequency English words necessary for identifying and describing people, places, and objects, by retelling simple stories and basic information represented or supported by pictures, and by learning and using routine language needed for classroom communication	

ENGLISH LANGUAGE PROFICIENCY STANDARDS—GRADE 4

Unit 9		Correlation—Teacher's Guide
ELPS 3.C	speak using a variety of grammatical structures, sentence lengths, sentence types, and connecting words with increasing accuracy and ease as more English is acquired	
ELPS 3.D	speak using grade-level content area vocabulary in context to internalize new English words and build academic language proficiency	p. 18
ELPS 3.E	share information in cooperative learning interactions	p. 72, p. 75, p. 93, p. 100, p. 113, p. 115, p. 122, p. 124, p. 139, p. 148, p. 149, p. 154
ELPS 3.F	ask and give information ranging from using a very limited bank of high-frequency, high-need, concrete vocabulary, including key words and expressions needed for basic communication in academic and social contexts, to using abstract and content-based vocabulary during extended speaking assignments	p. 43, p. 53, p. 92, p. 113, p. 122, p. 148
ELPS 3.G	express opinions, ideas, and feelings ranging from communicating single words and short phrases to participating in extended discussions on a variety of social and grade appropriate academic topics	p. 29
ELPS 3.H	narrate, describe, and explain with increasing specificity and detail as more English is acquired	p. 142
ELPS 3.I	adapt spoken language appropriately for formal and informal purposes	
ELPS 3.J	respond orally to information presented in a wide variety of print, electronic, audio, and visual media to build and reinforce concept and language attainment	
(4) Cross-curricular second language acquisition/reading. The ELL reads a variety of texts for a variety of purposes with an increasing level of comprehension in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in reading. In order for the ELL to meet grade-level learning expectations across the foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. For kindergarten and grade 1, certain of these student expectations apply to text read aloud for students not yet at the stage of decoding written text. The student is expected to:		
ELPS 4.A	learn relationships between sounds and letters of the English language and decode (sound out) words using a combination of skills such as recognizing sound-letter relationships and identifying cognates, affixes, roots, and base words	
ELPS 4.B	recognize directionality of English reading such as left to right and top to bottom	

ENGLISH LANGUAGE PROFICIENCY STANDARDS—GRADE 4

Unit 9		Correlation—Teacher's Guide
ELPS 4.C	develop basic sight vocabulary, derive meaning of environmental print, and comprehend English vocabulary and language structures used routinely in written classroom materials	
ELPS 4.D	use prereading supports such as graphic organizers, illustrations, and pretaught topic related vocabulary and other prereading activities to enhance comprehension of written text	p. 15, p. 43, p. 53, p. 100, p. 131, p. 142
ELPS 4.E	read linguistically accommodated content area material with a decreasing need for linguistic accommodations as more English is learned	
ELPS 4.F	use visual and contextual support and support from peers and teachers to read grade-appropriate content area text, enhance and confirm understanding, and develop vocabulary, grasp of language structures, and background knowledge needed to comprehend increasingly challenging language	p. 139
ELPS 4.G	demonstrate comprehension of increasingly complex English by participating in shared reading, retelling or summarizing material, responding to questions, and taking notes commensurate with content area and grade level needs	p. 40
ELPS 4.H	read silently with increasing ease and comprehension for longer periods	
ELPS 4.I	demonstrate English comprehension and expand reading skills by employing basic reading skills such as demonstrating understanding of supporting ideas and details in text and graphic sources, summarizing text, and distinguishing central ideas from details commensurate with content area needs	
ELPS 4.J	demonstrate English comprehension and expand reading skills by employing inferential skills such as predicting, making connections between ideas, drawing inferences and conclusions from text and graphic sources, and finding supporting text evidence commensurate with content area needs	
ELPS 4.K	demonstrate English comprehension and expand reading skills by employing analytical skills such as evaluating written information and performing critical analyses commensurate with content area and grade-level needs	

ENGLISH LANGUAGE PROFICIENCY STANDARDS—GRADE 4

Unit 9		Correlation—Teacher's Guide
(5) Cross-curricular second language acquisition/writing. The ELL writes in a variety of forms with increasing accuracy to effectively address a specific purpose and audience in all content areas. ELLs may be at the beginning, intermediate, advanced, or advanced high stage of English language acquisition in writing. In order for the ELL to meet grade-level learning expectations across foundation and enrichment curriculum, all instruction delivered in English must be linguistically accommodated (communicated, sequenced, and scaffolded) commensurate with the student's level of English language proficiency. For kindergarten and grade 1, certain of these student expectations do not apply until the student has reached the stage of generating original written text using a standard writing system. The student is expected to:		
ELPS 5.A	learn relationships between sounds and letters of the English language to represent sounds when writing in English	
ELPS 5.B	write using newly acquired basic vocabulary and content-based grade-level vocabulary	p. 30
ELPS 5.C	spell familiar English words with increasing accuracy, and employ English spelling patterns and rules with increasing accuracy as more English is acquired	
ELPS 5.D	edit writing for standard grammar and usage, including subject-verb agreement, pronoun agreement, and appropriate verb tenses commensurate with grade-level expectations as more English is acquired	
ELPS 5.E	employ increasingly complex grammatical structures in content area writing commensurate with grade level expectations such as (i) using correct verbs, tenses, and pronouns/antecedents; (ii) using possessive case (apostrophe -s) correctly; and, (iii) using negatives and contractions correctly	
ELPS 5.F	write using a variety of grade-appropriate sentence lengths, patterns, and connecting words to combine phrases, clauses, and sentences in increasingly accurate ways as more English is acquired	
ELPS 5.G	narrate, describe, and explain with increasing specificity and detail to fulfill content area writing needs as more English is acquired	

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