Teacher's Guide

arts & sciences for

kids

Glorious Glass

200

MAGAZINE ARTICLES

What Is Glass? 6 Expository Nonfiction 900L
Breaking News in Glassmaking 8 Expository Nonfiction
In the Hot Shop
The Glass Ocean
Living Glass
Safety by Accident
Ben Franklin's Favorite Invention

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Teacher's Guide for *Ask: Glorious Glass*

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OVERVIEW

In this magazine, readers will learn all about glass. **Ask: Glorious Glass** includes information about the composition and characteristics of glass, the

history of glass, and the artistic, musical, and practical uses of glass.

ESSENTIAL QUESTION:

What can you learn about glass?



Using This Guide

We invite you to use this magazine as a flexible teaching tool, ideal for providing interdisciplinary instruction of social studies and science content as well as core literacy concepts. Find practical advice for teaching individual articles or use a mini-unit that helps your students make cross-text connections as they integrate ideas and information.

READ INDIVIDUAL ARTICLES PAGES 4 - 10

Each article in this magazine is well-suited for teaching literacy concepts and content area knowledge. For each individual article in this guide, you'll find the following:





TEACH A MINI-UNIT PAGES 12 - 14

Magazine articles can easily be grouped to make cross-text connections and comparisons. Our Mini-Unit allows students to read and discuss multiple articles and integrate ideas and information (CCSS.Reading.9). Discussing multiple articles (CCSS.Reading.9) prepares students to write texts to share and publish in a variety of ways (CCSS.Writing.2).

Skills and Standards Overview

Essential Question: What can you learn about glass?

MAGAZINE ARTICLES	CORE CONTENT CONCEPT	LITERACY SKILLS	CORRESPONDING CCSS ANCHOR STANDARDS
What Is Glass? Expository Nonfiction	Heating or cooling a substance may cause changes that can be observed.	 Close Reading Analyze Text Features Interpret Visual Information Write a Narrative 	Reading 1, 5 & 7 Writing 3
Breaking News in Glassmaking Expository Nonfiction	Over time, people's needs and wants change, as do their demands for new and improved technologies.	Close ReadingAnalyze Word ChoiceAnalyze TonePresent a Report	Reading 1, 2, & 4 Speaking & Listening 4
In the Hot Shop Photo Essay	Heating or cooling a substance may cause changes that can be observed.	 Close Reading Analyze Text Features Analyze Author's Purpose Write Interview Questions 	Reading 1, 5 & 6 Writing 3
The Glass Ocean Expository Nonfiction	Over time, people's needs and wants change, as do their demands for new and improved technologies.	 Close Reading Analyze Tone Analyze Author's Purpose Write a Personal Essay 	Reading 1, 2, 4 & 6 Writing 2
Living Glass Expository Nonfiction	Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.	 Close Reading Analyze Word Choice Analyze Author's Purpose Write a Narrative 	Reading 1, 4 & 6 Writing 3
Safety by Accident Expository Nonfiction	When new technologies become available, they can bring about changes in the way people live and interact with one another.	 Close Reading Analyze Text Structure Compare Texts Write a Scene 	Reading 1, 3, 5 & 9 Writing 3
Ben Franklin's Favorite Invention Expository Nonfiction	Over time, people's needs and wants change, as do their demands for new and improved technologies.	 Close Reading Interpret Visual Information Analyze Tone Research and Write 	Reading 1, 3, 4 & 7 Writing 2

Comparing Texts: Reading 9

Mini-Unit: Reading 1; Writing 2; Speaking & Listening 1



ARTICLE: What Is Glass?

Magazine pages 6 - 7, Expository Nonfiction



This article describes the composition and characteristics of glass.

ESSENTIAL QUESTION

What can you learn about glass?

CORE CONTENT CONCEPT

Science Heating or cooling a substance may cause changes that can be observed.

CROSS-CURRICULAR EXTENSION

Science Explore the website of the famous Corning Museum of Glass. Find out what kinds of exhibits and workshops they have. Watch glassmaking demonstrations. Share your experiences with the class.

KEY VOCABULARY

mineral (p. 6) a substance such as quartz or coal that is naturally formed under the ground

limestone (p. 6) a type of white stone that is commonly used in building

silicon (p. 6) a chemical element that is found in the earth's crust and is used especially in computers and electronics

PREPARE TO READ

Display a KWL chart and explain that this article is about glass. Discuss with students what they know and want to know about glass, and add this information to the chart. Come back to the chart after students have read the article and work with them to fill in the last column.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What is glass made of? Find details in the article that support your answer. *CCSS Reading 1*
- How is glass like a "frozen snapshot of liquid rock"? Use details from the article to support your answer. *CCSS Reading 1*
- Why is it possible to see through glass even though glass is solid? Support your answer with details from the article. *CCSS Reading 1*

Craft and Structure

- **Analyze Text Features** Read the speech-bubble headings in this article. Why do you think the writer included them? How do they help you understand the article? Discuss your ideas with a partner. *CCSS Reading 5*
- Interpret Visual Information What ideas in the text do the illustrations help you understand? How would you describe these illustrations? Are they serious or humorous? Explain your answer. *CCSS Reading 7*

WRITING

Write a Narrative You use glass from morning to night—looking in the mirror when you brush your hair, drinking a glass of juice, closing the window when you're cold. Can you imagine what life would be like if glass did not exist? Write a story to describe this. What problems and challenges would arise without glass? What would you use in place of glass? Make your story silly or serious. Share it with the class.

ARTICLE: Breaking News in Glassmaking

Magazine pages 8 - 11, Expository Nonfiction



This article describes important events and innovations in the history of glass.

ESSENTIAL QUESTION

What can you learn about glass?

CORE CONTENT CONCEPT

Science Over time, people's needs and wants change, as do their demands for new and improved technologies.

CROSS-CURRICULAR EXTENSION

Art Design a stained glass window on paper using markers or colored pencils. Make a design that reflects something that's important to you, such as music, friends, family, or pets. Share your "glass" with the class.

KEY VOCABULARY

glaze (p. 8) a liquid mixture that is put on the surface of something and that becomes shiny and smooth when it is dry

molten (p. 8) melted by heat

flasks (p. 10) glass bottles used in scientific laboratories

furnace (p. 10) an enclosed container in which heat is produced

PREPARE TO READ

Preview the title of the article and the pictures and photos. Invite students to share what they notice about the format of the article. Explain that this article is a timeline that tells the history of glassmaking. Have students look at the first and last entries to note how far the use of glass has come.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What is the main idea of this article? Support your response with details from the article. *CCSS Reading 2*
- What influence did people from different parts of the world have on glassmaking? Cite text details to support your answer. *CCSS Reading 1*
- Explain how making windows has changed over time. Find details in the text and pictures to support your answer. *CCSS Reading 1*

Craft and Structure

- Analyze Word Choice The phrase "breaking news" in the article title is a pun, or a play on words. What two meanings of this phrase did the author have in mind? Discuss your ideas with a partner. *CCSS Reading 4*
- **Analyze Tone** How does the author feel about the history of glass? Is he dull and serious, silly, or something else? Which words and details convey the tone? Do the illustrations affect the tone? *CCSS Reading 4*

SPEAKING AND LISTENING

Present a Report Choose one of the people, innovations, or events mentioned in this article and conduct research to find out more about it. For example, you might want to learn more about architect Mies van der Rohe, the British tax on windows, or the glassblowers of Murano. After you choose your topic, come up with some questions about it that you can answer with your research. Then create an oral report for the class.





ARTICLE: In the Hot Shop

Magazine pages 12 - 17, Photo Essay



In a glass blowing studio in Chicago, teams of artists and students turn melted sand into glass art.

ESSENTIAL QUESTION

What can you learn about glass?

CORE CONTENT CONCEPT

Science Heating or cooling a substance may cause changes that can be observed.

CROSS-CURRICULAR EXTENSION

Art There are many artists who work with glass—Dale Chihuly is one of the most well-known. Research a glass artist. What inspires the artist? What does he or she create? Make a poster the tells about the artist and his or her work.

KEY VOCABULARY

fragile (p. 12) easily broken or damaged

pincer (p. 17) a small tool that is used for holding or gripping small objects

crimps (p. 17) makes the surface or edge of something have many small waves or folds

kiln (p. 17) an oven or furnace that is used for hardening, burning, or drying something

PREPARE TO READ

Display a blown glass vase (real or photo). Ask students if they have seen glass objects that are similar. Discuss with students how they think the vase was made. Then have them come up with questions about the vase and how it was made. Record questions on the board. Have students read to find answers.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- How is teamwork important in making glass art? Support your response with details from the text. *CCSS Reading 1*
- Find examples of how concentration and coordination are important in making glass art. Use details from the text to support your response. *CCSS Reading 1*
- What do the student artists enjoy about making glass art? Cite details from the text to support your response. *CCSS Reading 1*

Craft and Structure

- **Analyze Text Features** The numbered sections describe steps the students take to make a glass fish. With a partner, write a short heading for each step. For example, the heading for Step 1 could be "Make a Plan." *CCSS Reading 5*
- **Analyze Author's Purpose** What is the author's purpose for writing this article—to entertain readers, to inform them, or to persuade them? Does the author have more than one purpose? Explain your thinking. *CCSS Reading* 6

WRITING

Write Interview Questions Imagine you are going to interview Joe, Josh, LT, and Jalen at Ignite. Write four to six questions for them that can be answered with the information in this article. For example, one question for LT might be, "What is it that you like about glass art?" For each of your questions, write the answer.





ARTICLE: The Glass Ocean

Magazine pages 18 - 21, Expository Nonfiction



Read this article to learn about Leopold and Rudolf Blaschka, glass artists who made models of sea creatures for schools and museums over 150 years ago.

ESSENTIAL QUESTION

What can you learn about glass?

CORE CONTENT

Science Over time, people's needs and wants change, as do their demands for new and improved technologies.

CROSS-CURRICULAR EXTENSION

Art Make your own model of a jellyfish, octopus, or other sea creature. Instead of glass, use household items and craft supplies. Research your creature and make your model as detailed as you can. Display it in the classroom.

KEY VOCABULARY

paraffin (p. 20) a soft, waxy substance that is usually made from petroleum or coal and is used in candles and other products

tongs (p. 20) a tool used for lifting or holding objects that is made of two long pieces connected at one end or in the middle

frit (p. 21) ground-up colored glass bits

PREPARE TO READ

Read the title "The Glass Ocean" and preview the photos. Ask students what they think this article is going to be about. Write predictions on the board. Then remind students to check their predictions as they read the article.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- How were Leopold and Rudolf Blaschka's glass models of ocean life important to schools? Use details from the text to support your answer. *CCSS Reading 1*
- Write a brief summary of the stages involved in making a glass octopus. Cite details from the text in your summary. *CCSS Reading 2*
- Why are the Blaschka's glass models of sea creatures and plants still important today? Support your response with details from the text. *CCSS. Reading 1*

Craft and Structure

- **Analyze Tone** How would you describe the author's tone, or attitude, toward the glass artwork of the Blaschkas—amused, impressed, indifferent? Which words and details reveal the tone? *CCSS Reading 4*
- Analyze Author's Purpose Authors write to persuade, to entertain, to inform, or to express an opinion. Why do you think this author wrote about the glass artwork of the Blaschkas? Support your ideas. *CCSS Reading 6*

WRITING

Write a Personal Essay Leopold Blaschka was fascinated by jellyfish. Their beauty inspired him to create glass models. Think of a time when you felt inspired to make something or do something creative or special. Write a short essay to describe this and what happened as a result.



ARTICLE: Living Glass

Magazine pages 22 - 23, Expository Nonfiction



The shells and skeletons of most sea creatures are composed of hard calcium, but there's one sea creature whose skeleton is made of silica—the same thing glass is made of. This article describes the characteristics and habits of the glass sponge.

PREPARE TO READ

Display photos of sponges and invite students to share anything they know about them. Tell students that sponges are a type of animal that lives in the ocean and that sponges are permanently attached to a location. Explain that the next article describes an unusual and rare type of sponge.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What do glass sponges eat? How do they get their food? Use information in the text to support your answer. *CCSS Reading 1*
- How do glass sponge reefs form? Cite details from the text to support your answer. CCSS Reading 1
- How have scientists changed their thinking about glass sponges? Support your answer with details from the text. *CCSS Reading 1*

Craft and Structure

- Analyze Word Choice According to one scientist, discovering living glass reefs was like finding a "living herd of dinosaurs." What did the scientist mean by this? Discuss your ideas with a partner. *CCSS Reading 4*
- **Analyze Author's Purpose** What is the author's purpose for writing this article—to entertain readers, to inform them, or to persuade them? Does the author have more than one purpose? Explain your thinking. *CCSS Reading* 6

WRITING

Write a Narrative Imagine that your skeleton is made of glass. Write a story telling what a day in your life might be like with a glass skeleton. What would you do differently? In what ways would you need to be careful?

ESSENTIAL QUESTION

What can you learn about glass?

CORE CONTENT CONCEPT

Science Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.

CROSS-CURRICULAR EXTENSION

Science Conduct research to learn about the three types of skeletal systems: hydrostatic skeleton, exoskeleton, and endoskeleton. What kind of skeleton system does the glass sponge have? What kind do you have?

KEY VOCABULARY

fuses (p. 23) joins or becomes joined because of heat or a chemical reaction

conservationist (p. 23)

someone who works to protect animals, plants, and natural resources or to prevent the loss or waste of natural resources



ARTICLE: Safety by Accident

Magazine pages 24 - 25, Expository Nonfiction



This article describes the development of safety glass, which is used to make car windshields.

ESSENTIAL QUESTION

What can you learn about glass?

CORE CONTENT CONCEPT

Science When new technologies become available, they can bring about changes in the way people live and interact with one another.

CROSS-CURRICULAR EXTENSION

History Édouard Bénédictus wasn't just a chemist. He was also a painter and a musical composer. He became famous for his art deco designs. Explore the artistic side of Bénédictus and learn about the style called art deco.

KEY VOCABULARY

tempered (p. 25) brought to the desired hardness or strength by heating and cooling

mesh (p. 25) a material made from threads or wires with evenly spaced holes that allow air or water to pass through

PREPARE TO READ

Explain that many inventions started out as mistakes, including potato chips, chocolate chip cookies, and Silly Putty. Ask students if they know of other mistakes that ended up being beneficial. Then tell students the next article is about a mistake that made history.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What connection did Bénédictus make between the flask and car accidents in Paris? Support your answer with details from the text. *CCSS Reading 3*
- What was the mistake that made history in this story? Use details from the text to support your response. *CCSS Reading 1*
- Compare the way Bénédictus made safety glass with the way it's made now. Cite text details to describe similarities and differences. CCSS Reading 3

Craft and Structure

- Analyze Text Structure This article describes the causes and effects that led to the development of safety glass. Identify and list at least three cause-effect relationships in the article. *CCSS Reading 5*
- **Compare Texts** Read the text box on page 25 titled "Glass Gets Tough." How does the information in the box connect to the main part of the article? Work with a partner to compare the texts. *CCSS Reading 9*

WRITING

Write a Scene What exactly did Édouard Bénédictus say to his assistant in the laboratory the day the flask fell? Write a humorous scene between these two men that includes dialogue as well as directions for movement, facial expressions and scenery. Work with a partner to perform your scene for the class.



ARTICLE: Ben Franklin's Favorite Invention

Magazine pages 26 - 27, Expository Nonfiction



Read this article to learn about the armonica, Benjamin Franklin's musical instrument made from glass.

ESSENTIAL QUESTION

What can you learn about glass?

CORE CONTENT CONCEPT

Science Over time, people's needs and wants change, as do their demands for new and improved technologies.

CROSS-CURRICULAR EXTENSION

Music You can make an instrument out of just about anything—CDs, tin cans, wooden sticks, rubber bands, and even a trash can. Research online or use your imagination to make a simple instrument. Form a band with classmates.

KEY VOCABULARY

cork (p. 27) a material that is made from the soft bark of a kind of oak tree

satisfaction (p. 27) a happy or pleased feeling because of something that you did or something that happened to you

PREPARE TO READ

Fill three thin glasses or wine glasses with different amounts of water. Demonstrate how to make a tone by wetting a finger and firmly rubbing it around the rim of a glass. Invite volunteers to take turns. Then explain that this activity inspired Benjamin Franklin to make an unusual musical instrument.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- Explain how to play the armonica. Cite details from the text to support your response. *CCSS Reading 1*
- Compare and contrast playing a set of stemmed wine glasses with playing an armonica. Use details from the text to support your answer. *CCSS Reading 3*
- How did people respond to Franklin's instrument? Support your response with details from the text. *CCSS Reading 1*

Craft and Structure

- Interpret Visual Information Study the illustrations that accompany the text. How do they support details presented in the text? Would your understanding of the armonica be clear without them? *CCSS Reading 7*
- **Analyze Tone** How does the author feel about the armonica? Does he seem disappointed? Enthusiastic? Impressed? Which words and details help convey the tone? *CCSS Reading 4*

WRITING

Research and Write What ever happened to the armonica? Do any armonicas still exist? Conduct research online and in the library to learn more about the armonica's fate. In your report, try to match the tone used in the article. Share your work with the class.



CROSS-TEXT CONNECTIONS

SYNTHESIZE: Guide students to compare articles they read. Help students find the connections between pieces of information in multiple articles. Use prompts, such as the following examples, to have students work together to **Integrate Ideas and Information** *(CCSS.Reading.9)*.

- Both "In the Hot Shop" and "The Glass Ocean" tell about making sea creatures out of glass. Compare the information about glassblowing and making sea creatures in these articles. Has glassblowing changed very much since the Blaschka's began making glass models more than 150 years ago? Write 1-2 paragraphs to answer this question. Support your answer with details from the texts.
- Glass is used for many different purposes. Create a chart with four columns labeled "Art and Music," "Science," "Buildings and Architecture," and "Safety." Then look through the magazine articles to find examples of how glass is used for each of these purposes. Add more columns if you want to include more purposes. Get together with a partner to compare charts.
- "The Glass Ocean," "Safety by Accident" and "Ben Franklin's Favorite Invention" tell about people who were inspired to make things from glass: Leopold Blaschka, Édouard Bénédictus, and Benjamin Franklin. Compare the creators in these articles by answering the questions below.
 - What did each man create using glass?
 - What was the purpose of each man's creation?
 - What inspired each man to create something from glass?
 - Is this creation still in use today?
- What are the qualities of glass? Look through "What Is Glass?," "In the Hot Shop," and at least one other article to find and record words that describe these qualities. Get together with a small group of classmates to compare lists.
- Compare the sea creatures in "The Glass Ocean" and "Living Glass." How are they similar and different? Use a Venn diagram (p. 17) to record your ideas.

MINI-UNIT

EXPLORATORY LEARNING - FLEXIBLE MINI-UNIT DESIGN

ENGAGE

READ FOR A PURPOSE

APPLY

This mini-unit offers students an opportunity for an in-depth look at the topic of glass. Students will identify objects made from glass and discuss ideas and information from the magazine articles. Then they will work in groups to brainstorm, research, and create exhibits for a glass museum in the classroom.

ENGAGE: Engage students in the topic of glass by first reviewing the Essential Question: What can you learn about glass? Have students brainstorm objects made from glass. Then discuss with students some of the ideas and information about glass from the magazine. Record responses in a chart like the one below.

Objects	Ideas and Information
marbles	The main ingredient of glass is sand.
windows	Glassblowing was invented in Syria in 50 BCE.
aquarium	Before photos and videos, glass models were used to teach students about ocean life.
magnifying glass	
pie pan	
lightbulbs	
mirrors	

READ FOR A PURPOSE

INTRODUCE THE ACTIVITY: GLASS MUSEUM Tell students that they will be working in groups to create exhibits on ideas in the magazine articles. Explain that their exhibits will be part of a classroom glass museum that other classes will be invited to visit.

Help students brainstorm topics and formats for their exhibits. A few ideas are shown below, but others are certainly possible.

Formats
• diorama
• timeline
 poster with illustrations
 presentation with visuals
expert panel
demonstration
dramatization

Divide the class into groups now and have group members work together to choose their topics and come up with a format for their exhibits. Tell students that they can include ideas from several articles in their exhibit. Have groups write a short description of their topic and exhibit and present it to you for approval before they move on to the research stage.

RETURN TO THE TEXT: Explain to students that before they can create their exhibits, they need to go back through the magazine with group members to gather information they will use for their projects. Remind students that they can include ideas from several articles in their exhibit. Distribute a copy of the Research Notes graphic organizer (p. 15) to each student and have them work individually to gather information.

MINI-UNIT (cont.)

APPLY: GLASS MUSEUM Now that students have brainstormed ideas for their exhibits and conducted research on their topics, they are ready to create their exhibits.

MATERIALS

- completed Research Notes graphic organizers
- blank Exhibit Planner organizers (p. 16)
- art supplies, such as paper, markers, and colored pencils
- other materials as needed

STEP 1: Plan

Remind groups that they have chosen their topics and formats and have conducted research. Explain that now they will work together to figure out the materials they will need for their exhibits and the steps they will take to create them. Distribute one copy of the Exhibit Planner graphic organizer to each group. Tell groups to discuss ideas and listen respectfully. Suggest groups appoint a note-taker to record ideas.

STEP 2: Create

Have groups gather the supplies they need to create their exhibits. Invite groups to meet with you if they need help or run into problems.

STEP 3: Review

Tell groups to take time to make sure their work is accurate and clear. Suggest students create title cards for their exhibits if they have not done so yet.

STEP 4: Rehearse

Have groups decide what roles members will play in presenting the exhibits. Some may want to talk about the exhibit while others give a demonstration or answer questions. Roles will depend on the type of exhibit groups have created.

STEP 5: Present

Have group members set up their exhibits around the classroom. Invite another class to visit your glass museum.

MINI-UNIT (cont.)

RESEARCH NOTES

Topic:		
Notes from:	Notes from:	
	-	

NAME:		
	EXHIBIT PLANNER	
Name of Exhibit:		

Materials Needed		
Steps for Making the Exhibit		





Appendix Meeting State and National Standards: Core Instructional Concepts

The articles in this magazine provide a wealth of opportunities for meeting state and national instructional standards. The following pages contain charts listing Core Instructional Concepts for each of three curricular areas: English Language Arts, Science, and Social Studies.

USING THE STANDARDS CHARTS

ELA

Corresponding CCSS anchor standards have been listed next to each item on the Core Instructional Concepts chart. To customize the chart, add your own grade, state, or district standards in the last column. Match the concepts and standards from the chart to the activities on each page of the Teacher's Guide to complete your lesson plans.

SOCIAL STUDIES

Content Concepts in each Article Guide are based on Dimension 2 of the CS Framework for Social Studies: Applying Disciplinary Concepts and Tools. Use the last column in the accompanying chart to correlate these concepts to your state or district standards.

SCIENCE

Content Concepts in each Article Guide are drawn from the Three Dimensions of the Next Generation Science Standards. You will also find connections to these concepts within individual close-reading questions.

MATH

Content Opportunities for math activities are provided in the Cross-Curricular extensions on each Article Guide page.

CORE INSTRUCTIONAL CONCEPTS: READING, LITERATURE, AND LANGUAGE ARTS

SKILLS AND CONCEPTS	CCSS ANCHOR STANDARD	CORRESPONDING STANDARD

KEY IDEAS AND DETAILS

Read closely to determine what a text says explicitly.	Reading 1	
Make logical inferences to determine what the text communicates implicitly.	Reading 1	
Cite specific textual evidence to support conclusions drawn from the text.	Reading 1	
Determine central ideas or themes of a text and analyze their development.	Reading 2	
Summarize key supporting details and ideas.	Reading 2	
Analyze how individuals, events, and ideas develop and interact over the course of a text.	Reading 3	

CRAFT AND STRUCTURE

Interpret words and phrases as they are used in a text.	Reading 4	
Determine technical, connotative, and figurative meanings.	Reading 4	
Analyze how specific word choices shape meaning or tone.	Reading 4	
Analyze the structure of texts (sequence, cause/effect, compare/ contrast, problem/solution)	Reading 5	
Recognize the genre, key elements, and characteristics of literary texts.	Reading 5	
Assess how point of view or purpose shapes the content and style of a text.	Reading 6	
Analyze how an author's style and tone affects meaning.	Reading 6	

INTEGRATION OF KNOWLEDGE AND IDEAS

Integrate and evaluate content presented in diverse media and formats.	Reading 7	
Identify and evaluate the argument and claims in a text.	Reading 8	
Analyze how two or more texts address similar themes or topics.	Reading 9	

WRITING

Write arguments to support claims, using valid reasoning and relevant	Writing 1	
and sufficient evidence.		
Write informative/explanatory texts to examine and convey complex	Writing 2	
ideas and information clearly and accurately.		
Write narratives to develop real or imagined experiences or events.	Writing 3	
Draw evidence from literary or informational texts to support analysis,	Writing 9	
reflection, and research.		
Conduct short as well as more sustained research projects.	Writing 10	

CORE INSTRUCTIONAL CONCEPTS: SOCIAL STUDIES

C3 INQUIRY ARC DIMENSION 2: APPLYING DISCIPLINARY CONCEPTS AND TOOLS	STATE OR DISTRICT STANDARD

CIVICS	
Analyze the origins, functions, and structure of different governments and the origins and	
purposes of laws and key constitutional provisions.	
Summarize core civic virtues and democratic principles.	
Evaluate policies intended to address social issues.	

ECONOMICS

Evaluate the benefits and costs of individual economic choices.	
Analyze economic incentives, including those that cause people and businesses to specialize	
and trade.	
Explain the importance of resources (i.e. labor, human capital, physical capital, natural	
resources) in methods of economic production.	
Explain the functions of money in a market economy.	
Explain the importance of competition in a market economy.	
Apply economic concepts (i.e. interest rate, inflation, supply and demand) and theories of how	
individual and government actions affect the production of goods and services.	
Analyze economic patterns, including activity and interactions between and within nations.	

GEOGRAPHY

Construct and use maps and other graphic representations (i.e. images, photographs, etc.) of different places.	
Explain cultural influences on the way people live and modify and adapt to their environments.	
Analyze places, including their physical, cultural and environmental characteristics and how	
they change over time.	
Analyze movement of people, goods, and ideas.	
Analyze regions, including how they relate to one another and the world as a whole from a	
political, economic, historical, and geographic perspective.	

HISTORY

Interpret historical context to understand relationships among historical events or	
developments.	
Evaluate historical events and developments to identify them as examples of historical change	
and/or continuity.	
Analyze perspectives, including factors that influence why and how individuals and groups	
develop different ones.	
Evaluate historical sources, including their reliability, relevancy, utility, and limitations.	
Analyze causes and effects, both intended and unintended, of historical developments.	

DIMENSION 1: SCIENTIFIC AND ENGINEERING PRACTICES

Dimension 1 focuses on the practice of science, and how knowledge is continually adapted based on new findings. The eight practices of the K-12 Science and Engineering Curriculum are as follows:

- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data

- Using mathematics and computational thinking
- Constructing explanations (for science) and designing ٠ solutions (for engineering)
- Engaging in argument from evidence ٠
- Obtaining, evaluating, and communicating information

DIMENSION 2: CROSSCUTTING CONCEPTS

Dimension 2 provides an organizational schema for integrating and interrelating knowledge from different science domains. The eight NGSS Crosscutting Concepts are as follows:

- Patterns
- Similarity and Diversity
- Cause and Effect .
- Scale, Proportion, and Quantity

- Systems and System Models
- **Energy and Matter**
- Structure and Function
- Stability and Change

DIMENSION 3: DIMENSIONS AND DISCIPLINARY CORE IDEAS

Dimension 3 presents a contained set of Disciplinary Core Ideas to support deeper understanding and application of content. The following chart details Core Ideas for curriculum, instructional content, and assessments within four domains.

LIFE SCIENCE

Forces and

Interactions

Energy

Light

Sound

Matter

Waves

Heat

•

Electricity/

Magnetism

Chemistry

Information

Processing

- Structure and Function of Living Things
- Life Cycles and Stages
- Reproduction & Inherited Traits
- Animals
- Plants

- PHYSICAL SCIENCE
- EARTH SCIENCE
 - Weather
 - Climate
 - Rocks & Soil Erosion and
 - Weathering
 - Landforms
 - Water
 - Oceans
 - History of Earth
 - **Plate Tectonics**
 - Volcanoes. Earthquakes.
 - and Tsunamis

- SPACE SYSTEMS
 - Solar System
- Planets
- Moon Sun