

Teacher's Guide



MAGAZINE ARTICLES

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OVERVIEW

*In this magazine, readers will encounter a variety of unusual characters, actions, and events. **Spider: May/June 2017** includes fiction,*

nonfiction, and poetry that will surprise readers.

ESSENTIAL QUESTION:

What kinds of surprises do authors include in their writing?

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.

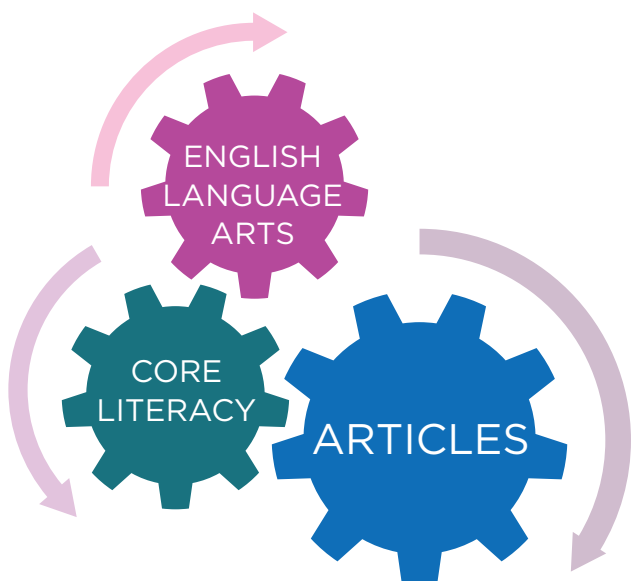
READ INDIVIDUAL ARTICLES PAGES 4 - 9

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 11 - 13

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).



Essential Question: What kinds of surprises do authors include in their writing?

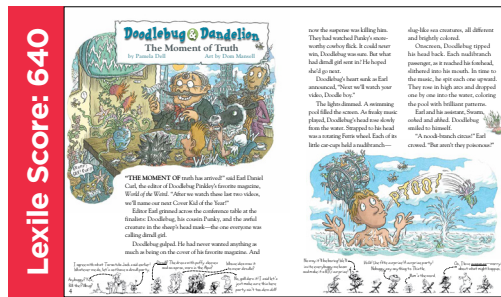
MAGAZINE ARTICLES	CORE CONTENT CONCEPT	LITERACY SKILLS	CORRESPONDING CCSS ANCHOR STANDARDS
Doodlebug & Dandelion Contemporary Realistic Fiction	A perspective is a way of thinking about something. Different story characters may have different perspectives, or ways of thinking, about the same thing.	<ul style="list-style-type: none"> • Close Reading • Analyze Visual Information • Analyze Perspectives • Write a Comic Strip 	<i>Reading 2, 3, 4 & 7</i> <i>Writing 3</i>
I Hit the Piñata Humorous Poem	The pattern of beats in a poem is called the rhythm. Poets add rhythm to their poems by repeating patterns of stressed and unstressed syllables.	<ul style="list-style-type: none"> • Close Reading • Analyze Visual Information • Analyze Sound Devices • Write a Poem 	<i>Reading 1, 3, 4 & 7</i> <i>Writing 3</i>
Monkey See, Monkey Do Folk tale	Folktales are passed down from generation to generation and often teach a lesson.	<ul style="list-style-type: none"> • Close Reading • Analyze Visual Information • Analyze Perspectives • Write a Story 	<i>Reading 1, 2, 3, 6 & 7</i> <i>Writing 3</i>
Venus's Vanishing Vase Science Fiction/Mystery	Mystery stories usually include detectives, criminals, clues, and a surprising twist at the end.	<ul style="list-style-type: none"> • Close Reading • Analyze Point of View • Analyze Mysteries • Write a Mystery 	<i>Reading 1, 3, 5 & 6</i> <i>Writing 3</i>
Malaysian Bottle Caps Procedure	Procedure texts usually include numbered steps to help readers understand how to do or make something.	<ul style="list-style-type: none"> • Close Reading • Analyze Tone • Interpret Visual Information • Write Directions 	<i>Reading 1, 6 & 7</i> <i>Writing 2</i>
Best Friends Contemporary Realistic Fiction	Stories told through letters, journals, or diaries are called epistolary fiction.	<ul style="list-style-type: none"> • Close Reading • Analyze Text Structure • Analyze Perspectives • Write an Epistolary Story 	<i>Reading 2, 3, 5 & 6</i> <i>Writing 3</i>

Comparing Texts: *Reading 9*

Mini-Unit: *Reading 3; Writing 3 & 5; Speaking & Listening 4*

ARTICLE: Doodlebug & Dandelion

Magazine pages 4 - 9, Contemporary Realistic Fiction



Read the final installment of “Doodlebug & Dandelion” to find out who is named *World of the Weird* magazine’s Cover Kid of the Year.

ESSENTIAL QUESTION

What kinds of surprises do authors include in their writing?

CORE CONTENT CONCEPT

Language Arts A perspective is a way of thinking about something. Different story characters may have different perspectives, or ways of thinking, about the same thing.

CROSS-CURRICULAR EXTENSION

Science Use the library and the internet to learn more about nudibranchs. Where do they live? What special features do they have? Draw a picture of a few and list interesting facts about them to share with classmates.

KEY VOCABULARY

flick (p. 5) movie

grand finale (p. 6) a very exciting or impressive ending of a performance or a show

spindly (p. 7) long and thin and usually weak

leering (p. 7) looking at someone in an evil or unpleasant way

PREPARE TO READ

If students have read the earlier parts of this story, review them now. Then have students preview the illustrations and make predictions about what will happen in this part of the story. Discuss students’ ideas about what will happen and who will win the contest. Remind students to review predictions as they read.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- How do Doodlebug’s feelings change over the course of the story? Use details from the story to support your response. *CCSS Reading 3*
- Summarize this story by retelling the key events in your own words. Cite details from the story to support your response. *CCSS Reading 2*
- What is surprising about the ending of this story? Support your response with details from the story. *CCSS Reading 3*

Craft and Structure

- **Analyze Visual Information** Get together with a partner and find the details in the story that connect to the different pictures. What emotions do the characters show in the pictures? *CCSS Reading 7*
- **Analyze Perspectives** Compare the attitudes of the different characters on page 8. How does each character react when they find out that the dirndl girl is Doodlebug’s teacher and that Doodlebug is the winner? *CCSS Reading 4*

WRITING

Write a Comic Strip Create a humorous comic strip based on an event in the story. First, plan the pictures you will draw in each frame of the comic strip and the dialogue for the characters. Then create your strip. Under each picture, write a caption that explains what is happening. When you’ve completed your comic strip, share it with the class.



In this humorous poem, a boy mistakes his napping father for a piñata.

ESSENTIAL QUESTION

What kinds of surprises do authors include in their writing?

CORE CONTENT CONCEPT

Language Arts The pattern of beats in a poem is called the rhythm. Poets add rhythm to their poems by repeating patterns of stressed and unstressed syllables.

CROSS-CURRICULAR EXTENSION

Art Use the library or internet to find directions for making a piñata. Fill your piñata with something fun and then take a picture of it. With adult supervision, invite friends to take turns whacking the piñata until it opens.

KEY VOCABULARY

piñata (p. 10) a decorated container filled with candies, fruits, and gifts that is hung up at parties or celebrations and hit with a stick by children until it is broken and the things inside it fall out

hammock (p. 10) a type of bed that consists of a piece of cloth hung between two trees or poles

PREPARE TO READ

Display a real piñata or show some photos of piñatas and ask students if they have ever been to a party where there was a piñata. Invite students to share their experiences. Then explain that the next poem is about a boy who thinks he's hitting a piñata, but he's actually hitting something very different.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- Who is the speaker in this poem? Find words and details that helped you know this. *CCSS Reading 3*
- How does the speaker's dad in a hammock look like a piñata? Use details from the picture to support your answer. *CCSS Reading 1*
- What is surprising about how this poem ends? Support your answer with details from the text and pictures. *CCSS Reading 3*

Craft and Structure

- Analyze Visual Information** What emotions do the characters show in the pictures? Think about the boy, the dog, and the dad. Who else is in the last picture? How does this person feel? Discuss with a partner. *CCSS Reading 7*
- Analyze Sound Devices** With a partner, identify any words that rhyme or have the same ending sound. Then take turns reading the poem aloud. Does the rhythm change or stay the same in each line? *CCSS Reading 4*

WRITING

Write a Poem Think of something silly, funny, or embarrassing you did that you didn't mean to do and then write a poem about it. Use funny words and phrases to make your poem playful and amusing. Create an illustration to go with your poem. Then share your poem with the class.

Lexile Score: 400



Read this story about two brothers who train a monkey to help them harvest coconuts.

ESSENTIAL QUESTION

What kinds of surprises do authors include in their writing?

CORE CONTENT CONCEPT

Language Arts Folktales are passed down from generation to generation and often teach a lesson.

CROSS-CURRICULAR EXTENSION

Reading Ask your school or local librarian to help you locate the story *Caps for Sale* by Esphyr Slobodkina. Read the story with a partner and then compare it to “Monkey See, Monkey Do.”

KEY VOCABULARY

coconut meat (p. 14) the white lining inside the shell of a coconut

rind (p. 14) the tough, outer skin of some fruits that is usually removed before the fruit is eaten

PREPARE TO READ

Ask students to explain the meaning of the phrase “monkey see, monkey do.” Help students understand that it means imitating an action without really understanding what you are doing. Tell students to look for examples of “monkey see, monkey do” as they read.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- Is Hitam smart? Cite examples from the text to support your answer. *CCSS Reading 3*
- Will the brothers learn from their actions or will they get in trouble again? Use details from the story to support your prediction. *CCSS Reading 1*
- What lesson does this story teach? Support your answer with details from the story. *CCSS Reading 2*

Craft and Structure

- Interpret Visual Information** Get together with a partner to retell the story. Take turns using the illustrations to help you retell the different parts of the story. *CCSS Reading 7*
- Analyze Perspectives** Why do Azimi and Daud think it’s a good idea to get Hitam to pick the coconuts? What do their parents think about this idea? Compare the perspectives of these characters. *CCSS Reading 6*

WRITING

Write a Story “Monkey See, Monkey Do” ends with Azimi saying, “Or maybe we will teach him to sell them . . .” Continue the story by writing about how Azimi and Daud try to teach Hitam to sell coconuts. Include a problem that occurs as a result and a lesson you want your readers to learn. Read your story to the class.

ARTICLE: Venus's Vanishing Vase

Magazine pages 15 - 19, Science Fiction/Mystery



In this story, four friends who are members of the InterPlanetary Private Investigators solve a mystery that takes place on the planet Venus.

ESSENTIAL QUESTION

What kinds of surprises do authors include in their writing?

CORE CONTENT CONCEPT

Language Arts Mystery stories usually include detectives, criminals, clues, and a surprising twist at the end.

CROSS-CURRICULAR EXTENSION

Science This story takes place on the planet Venus. Use the library and internet to answer this question: Why can't people live on Venus? Share what you discover with your classmates.

KEY VOCABULARY

teleport (p. 16) to instantly travel across space and distance

enquiring (p. 17) asking questions

swooned (p. 18) lost consciousness; fainted

PREPARE TO READ

Ask students to share mystery stories and movies they have read or watched. Invite students to identify crimes, suspects, detectives, or clues in these books and movies. Then explain that the next story is a mystery set on the planet Venus.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

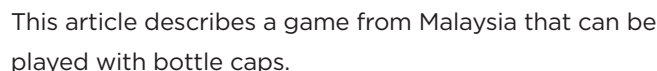
- Who is the leader of the I. P. P. I.? How do the other members help the team? Support your answer with details from the story. *CCSS Reading 3*
- Describe Mrs. Billingsworth. What do her actions and words reveal about her? Use details from the text to support your response. *CCSS Reading 3*
- Who stole the vase? How did Chloe figure this out? Cite story details to support your answer. *CCSS Reading 1*

Craft and Structure

- **Analyze Point of View** What thoughts were probably racing through Mrs. Billingsworth's mind as the detectives got closer to solving the case? Write this part of the story from her perspective. *CCSS Reading 6*
- **Analyze Mysteries** Create a four-column chart with these headers: victims, suspects, detectives, and clues. Work with a partner to add story information to the chart. *CCSS Reading 5*

WRITING

Write a Mystery Think of another case for I.P.P.I to solve and write about it. Your story should have a beginning, a middle, and an end (when the case is solved). Use descriptive details to tell about the characters and setting. Include dialogue and pictures that illustrate the most important scenes. Share your mystery with a partner. See if your partner can solve the mystery.



What kinds of surprises do authors include in their writing?

Language Arts Procedure texts usually include numbered steps to help readers understand how to do or make something.

Physical Education Malaysian Bottle Caps is a simple game to play but it requires a lot of coordination. Practice playing the game with your friends. See how long it takes you to get the hang of it.

mission (p. 20) a task or job that someone is given to do

barrier (p. 21) something that prevents or blocks movement from one place to another

racking up (p. 21) achieving or gaining

Display five bottle caps and a world map. Tell students that this next article explains how to play a game with bottle caps. Point out Malaysia on the map and explain that this is where the game comes from. Read aloud the first step and have volunteers take turns trying to play. Then have students read.

Key Ideas

- Why does Step 3 say “this is where things get interesting”? Use details from the text to support your answer. *CCSS Reading 1*
- Which step is the most difficult? Support your answer with details from the text. *CCSS Reading 1*
- What are two ways that you can rack up points? Cite details from Step 4 to support your answer. *CCSS Reading 1*

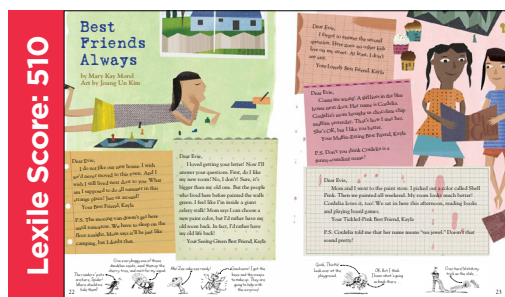
Craft and Structure

- **Analyze Tone** What is the author's attitude toward this game? Does the author seem to think it is a fun game or a boring game? Identify the words and details that reveal how the author feels. *CCSS Reading 6*
- **Interpret Visual Information** Are the illustrations in this article meant to be helpful or just decorative? Which is the most helpful? Discuss ideas with a partner. *CCSS Reading 7*

Write Directions Think of a game you know how to play, such as pick-up sticks, jacks, or marbles. Write a list of the steps you take to play the game. Number the steps and include a title. List any materials needed for the activity and add any tips you think would be helpful. Finally, create a picture to go with your writing.

ARTICLE: Best Friends Always

Magazine pages 22 - 27, Contemporary Realistic Fiction



Kayla and her family have just moved to a new town, and Kayla misses her best friend Evie. In this story told through letters, the girls learn how to make new friends and stay best friends.

ESSENTIAL QUESTION

What kinds of surprises do authors include in their writing?

CORE CONTENT CONCEPT

Language Arts Stories told through letters, journals, or diaries are called epistolary fiction.

CROSS-CURRICULAR EXTENSION

Writing When is the last time you wrote a letter to someone? Choose a friend or relative to write to. Tell them about school activities, trips you've taken, or your best friend. Ask for a reply to your letter. Then mail it and be patient.

KEY VOCABULARY

ages (p. 25) a long period of time

pitch (p. 26) to set up

PREPARE TO READ

Invite students to share their experiences with moving to a new town or having friends or family move away. Ask how this made them feel and how they keep in touch with the people they miss. Explain that the next story is told through letters between two friends after one friend has moved away.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- Use your own words to summarize the important events in this story. Cite details from the story in your summary. *CCSS Reading 2*
- What is the theme or lesson in this story? Support your answer with details from the story. *CCSS Reading 2*
- Write a description of Kayla. Cite details from the letters to support your description. *CCSS Reading 3*

Craft and Structure

- **Analyze Text Structure** Even though this story is told through letters, it has many of the same elements as a regular short story, including conflict. What is the main conflict in this story? How is this conflict resolved? *CCSS Reading 5*
- **Analyze Perspectives** How does Evie feel at first about Kayla's new friendship? How does Kayla feel at first about Evie's new friendship? How do their thoughts and feelings change over time? *CCSS Reading 6*

WRITING

Write an Epistolary Story Work with a partner to write your own story through letters. Instead of just one letter writer, you will have two. Decide together who and what the story will be about and what the conflict or problem will be. Then you and your partner can write letters from the perspective of the characters. Read the story "The Southpaw" by Judith Viorst to see another example of this story form.

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).

- In “Monkey See, Monkey Do” and “Venus’s Vanishing Vase,” the characters have to complete difficult tasks. Write 1-2 paragraphs to describe these tasks and how the characters try to complete them. Tell whether the tasks are successfully completed.
- Look at the illustrations in “Doodlebug & Dandelion,” “I Hit the Piñata,” and “Monkey See, Monkey Do.” How do these illustrations help you understand the surprising situations in the stories? Discuss ideas with a partner or a small group of classmates.
- Think about the characters in “Monkey See, Monkey Do” and “Best Friends Always.” What problems do the characters have? How do they solve their problems? Write 1-2 paragraphs to answer these questions for each story.
- Describe the surprises in “Doodlebug & Dandelion” and “I Hit the Piñata.” How are the surprises similar and different? Write a paragraph to explain this.
- Write 1-2 paragraphs to compare “Malaysian Bottle Caps” and “Best Friends Always.” Think about:
 - the purpose of each text
 - the purpose of the illustrations
 - the kind of information in each text
 - the way each text looks on the page

EXPLORATORY LEARNING - FLEXIBLE MINI-UNIT DESIGN

ENGAGE

READ FOR A PURPOSE

APPLY

This mini-unit gives students the opportunity for an in-depth look at the kinds of surprises authors include in their writing. First, students will participate in a story circle to make up a group story. Then they will choose one of the magazine stories and rewrite it to add a new ending.

ENGAGE: Engage students in the topic of surprises by reviewing the Essential Question: **What kinds of surprises do authors include in their writing?** Quickly brainstorm a few surprises from the magazine texts. Then explain that students are going to play a story circle game. Follow the procedure described in the box below.

Story Surprise Game

1. Ahead of time, choose a simple concept for the story, such as getting ready for school or going to a birthday party.
2. Put 10 slips of folded paper in a paper bag, box, or hat. Seven slips should be blank, and the other three slips should have the word suddenly written on them.
3. Have students sit in a circle.
4. Help students get started by making up the first few sentences of the story.
5. Go around the circle and have students take turns adding a few sentences to the story. Before a student takes a turn, he or she must pick a slip of paper from the bag. If the slip is blank, the student may add any details he or she chooses. If the slip says suddenly, the student must add a twist or surprise to the story.
6. Students should return slips to the bag after taking their turns. Try to go around the circle at least once.
7. If possible, record the story and play it back for students later.

READ FOR A PURPOSE

INTRODUCE THE ACTIVITY: A NEW ENDING Tell students that they will choose one of the stories from the magazine and write a new ending for it. Explain that they will change a character's decision or action so that the outcome of the story is different. Help students understand by talking about the ending of one of the stories. For example, you might ask "What would happen in 'Doodlebug and Dandelion' if Mrs. Noodleknocker offered to return Doodlebug's copies of *World of the Weird* so she could win the contest? How would Doodlebug react? How might this affect the outcome of the story?" Explain that students may rewrite their chosen story starting from any point in the story. Continue by telling students that they should add dialogue and make their ending as creative and surprising as possible. Have students choose the story they will work on for this project.

RETURN TO THE TEXT: Explain to students that before they can create a new story ending, they need to look closely at the story to decide where they will begin to rewrite it and what new event they will add. Distribute a copy of the New Ending Planner (p. 14) to each student and go over each part. Then have students use it to plan their new endings.



APPLY: A NEW ENDING Now that students have made notes about the story they chose for this project, they are ready to begin writing the new endings. Students should work independently on this project.

Materials

- completed New Ending Planners
- drawing paper
- colored pencils and markers

STEP 1: Draft Have students begin drafting their new ending, using the notes they made in their New Ending Planners to help them. Remind students to use dialogue in their writing and be creative.

STEP 2: Peer Review Have students exchange their work with a peer editor for feedback and suggestions. Explain that reviewers should offer feedback on ideas rather than word choice. Suggest students ask the following questions of their reviewers:

- Which parts did you like the best?
- Were any parts confusing?
- Did you feel as though you wanted more information or details at any point?

STEP 3: Revise and Proofread After students have received their reviewer's comments, have them revise their work. Remind students that they don't have to incorporate every suggestion the reviewer made. When students have finished their revisions, have them use the following checklist to proofread their final drafts:

- All my sentences begin with a capital letter.
- All proper nouns are capitalized.
- All my sentences end with a punctuation mark.
- I used quotations marks (" ") with my dialogue.
- I checked my words to make sure they are spelled correctly.

STEP 4: Draw Distribute paper and art supplies and have students draw a picture to go with their new story ending.

STEP 5: Share Have students take turns reading their new endings to the class and sharing their pictures.



NAME: _____

NEW ENDING PLANNER

Story Title:

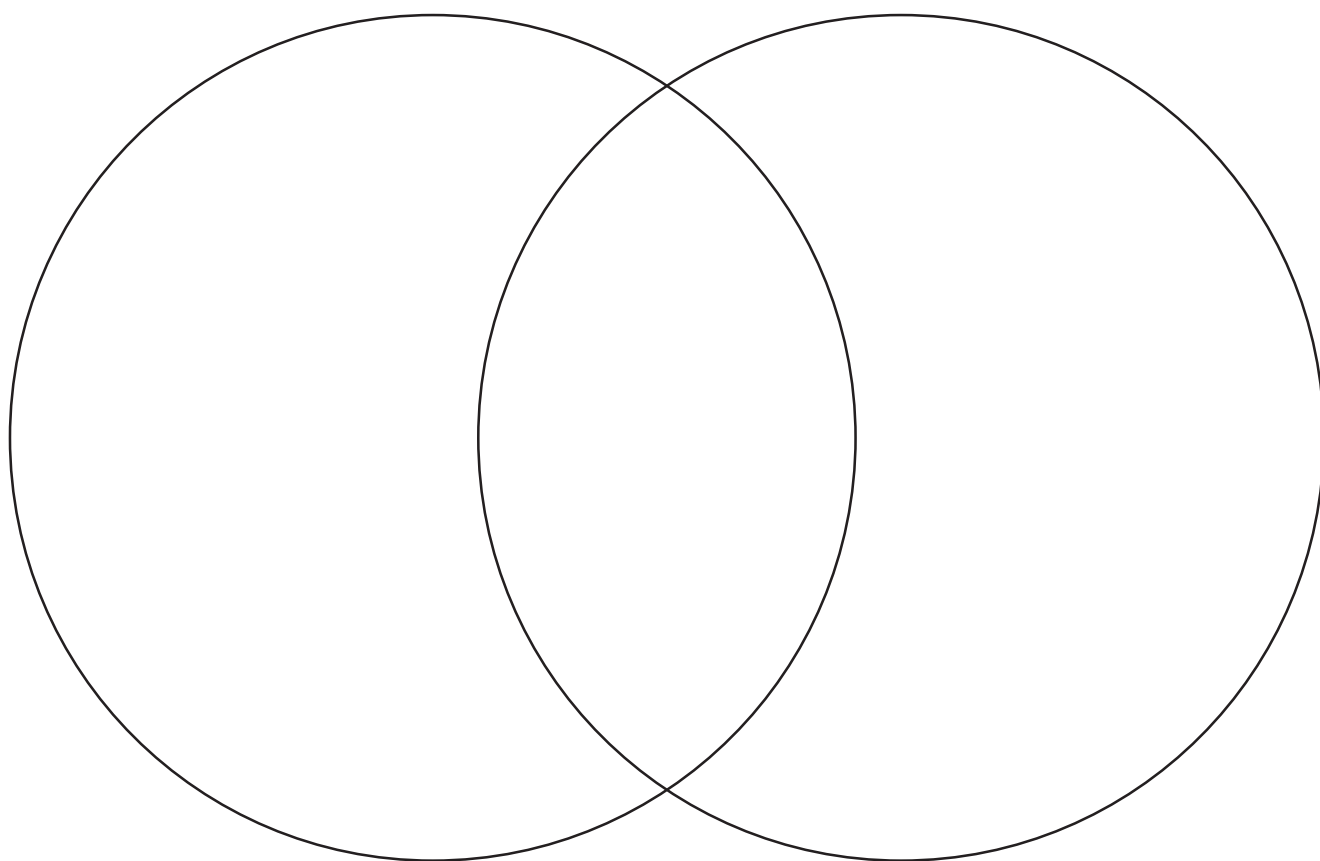
Character decision or action I am going to change

Events that will happen because of this change

The story will end when

NAME: _____

VENN DIAGRAM





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
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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 and sufficient evidence.	Writing 1	
Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately.	Writing 2	
Write narratives to develop real or imagined experiences or events.	Writing 3	
Draw evidence from literary or informational texts to support analysis, reflection, and research.	Writing 9	
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.	



CORE INSTRUCTIONAL CONCEPTS: SCIENCE

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 solutions (for engineering)
- Engaging in argument from evidence
- 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

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

PHYSICAL SCIENCE

- Forces and Interactions
- Energy
- Light
- Sound
- Electricity/Magnetism
- Matter
- Waves
- Heat
- Chemistry
- Information Processing

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

