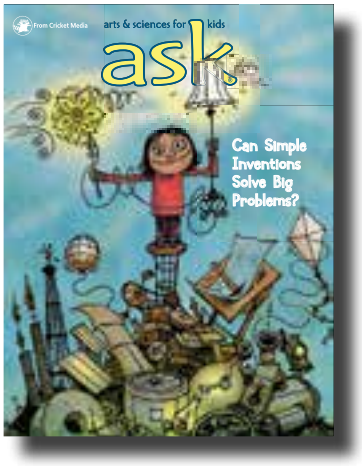
Teacher's Guide

MAGAZINE ARTICLES

Contents

Teacher's Guide for *Ask: Can Simple Inventions Solve Big Problems?*



OVERVIEW

In this magazine, readers will learn about inventors who use simple methods to make items that people need and that help the planet. **Ask: Can Simple Inventions Solve Big Problems?** *includes information about inventors who have found inexpensive ways to make light, clean drinking water, and cook food, a company that makes edible spoons, and things that can be made from plastic bottles. In addition, students will read about how to set up an inventor's workshop.*

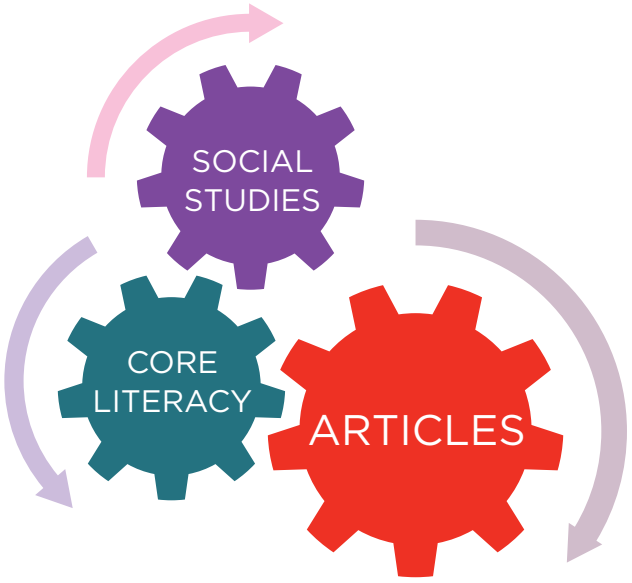
ESSENTIAL QUESTION:

How do inventors use simple methods to invent things people need?

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: How do inventors use simple methods to invent things people need?

MAGAZINE ARTICLES	CORE CONTENT CONCEPT	LITERACY SKILLS	CORRESPONDING CCSS ANCHOR STANDARDS
Inventing with Less Expository Nonfiction	People have used and are using natural and human resources to produce goods.	• Close Reading • Analyze Text Structure • Interpret Visual Information • Collaborate	*Reading 1, 2, 5 & 7* *Speaking & Listening 1*
Meet Amy Smith Expository Nonfiction	People have used and are using natural and human resources to produce goods.	• Close Reading • Analyze Word Choice • Analyze Tone • Write a Biographical Sketch	*Reading 1, 2 & 4* *Writing 2*
Someday Contemporary Realistic Fiction	Readers can learn about characters by paying attention to their actions, thoughts, and words.	• Close Reading • Analyze Author's Purpose • Interpret Visual Information • Write a Story	*Reading 2, 3, 6 & 7* *Writing 3*
Eat This Spoon Expository Nonfiction	People have used and are using natural and human resources to produce goods.	• Close Reading • Analyze Text Features • Analyze Text Structure • Write an Advertisement	*Reading 1, 2 & 5* *Writing 1 & 3*
10 Uses for a Plastic Bottle Photo Essay	People have used and are using natural and human resources to produce goods.	• Close Reading • Analyze Author's Purpose • Interpret Visual Information • Present a Report	*Reading 1, 2, 6 & 7* *Speaking & Listening 4*
Not-So-Simple Inventions Expository Nonfiction	People have used and are using natural and human resources to produce goods.	• Close Reading • Interpret Visual Information • Analyze Tone • Explain a Procedure	*Reading 1, 6 & 7* *Speaking & Listening 1*
The Mad Inventor's Workshop Expository Nonfiction	People have used and are using natural and human resources to produce goods.	• Close Reading • Interpret Visual Information • Analyze Word Choice • Write a Story	*Reading 1, 2, 4 & 7* *Writing 3*

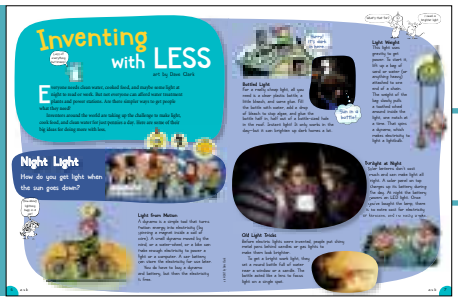
Comparing Texts: *Reading 9*

Mini-Unit: *Reading 1 & 4; Writing 2; Speaking & Listening 4*

ARTICLE: Inventing with Less

Magazine pages 6 - 11, Expository Nonfiction

Lexile Score: 990



Inventors around the world are taking up the challenge to find simpler and less expensive ways to create light, clean water, and cook food.

ESSENTIAL QUESTION

How do inventors use simple methods to invent things people need?

CORE CONTENT CONCEPT

Social Studies People have used and are using natural and human resources to produce goods.

CROSS-CURRICULAR EXTENSION

Research Conduct online and library research to learn about another simple invention used to make light, clean water, or cook food. Write the directions for making the tool and draw a picture. Present the directions to the class.

KEY VOCABULARY

bleach (p. 7) a strong chemical that is used to make something clean or white

parasites (p. 8) an animal or plant that lives in or on another animal or plant and gets food or protection from it

seeps (p. 8) flows or passes slowly through small openings in something

PREPARE TO READ

Explain that many people struggle to survive because they don't have access to basic resources. Ask students to name the things that people around the world need to survive. Tell students that in this article they will read about some simple inventions created to help people who struggle to survive.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What do you believe is the most useful invention on each page? Support your response with details from the article. *CCSS Reading 1*
- Why do you think this article is titled "Inventing with Less"? Identify details about the inventions that support your answer. *CCSS Reading 2*
- Choose three inventions and describe the pros and cons of using each. Use text details and your own ideas to support your response. *CCSS Reading 2*

Craft and Structure

- **Analyze Text Structure** Each of the three sections in this article begins with a heading and a question. With a partner, use the information in each section to answer the question above it. *CCSS Reading 5*
- **Interpret Visual Information** Work in a small group to study the photos and illustrations. Then choose two pictures from each section and discuss which specific ideas in the text the pictures help you to understand. *CCSS Reading 7*

SPEAKING AND LISTENING

Collaborate With a group of classmates, take turns asking and answering questions about the article. Use the words *who*, *what*, *why*, *where*, *when*, and *how*. Use details and information in the article to answer the questions.

ARTICLE: Meet Amy Smith

Magazine page 12, Expository Nonfiction

Lexile Score: 870

Amy Smith is an engineer who teaches at MIT, a research university in Cambridge, Massachusetts. At the university, she runs a program that looks for ways to improve life for people who do not have much money.

ESSENTIAL QUESTION

How do inventors use simple methods to invent things people need?

CORE CONTENT CONCEPT

Social Studies People have used and are using natural and human resources to produce goods.

CROSS-CURRICULAR EXTENSION

Social Studies Research one of the cooking stoves that have been invented to help people around the world, such as the Prakti, the Berkeley-Darfur, the Patsari, and the Save80. Find out how the stove works and who mainly uses it.

KEY VOCABULARY

incubator (p. 12) a piece of equipment in which very weak or sick babies are placed for special care and protection after their birth

foster (p. 12) to help something grow or develop

innovation (p. 12) the act or process of introducing new ideas, devices, or methods

PREPARE TO READ

Explain to students that the next article is about a person who is a problem-solver—she helps people by creating simple, inexpensive tools that improve life. Brainstorm with students a list of the characteristics they would expect such a problem-solver to have.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- How did Amy Smith's hot glue gun differ from the hot glue guns built by other students in her class? Use text details to support your answer. *CCSS Reading 1*
- Why does Amy Smith teach her students to talk with villagers? Provide details from the text to support your answer. *CCSS Reading 1*
- What does D-Lab try to do? What are some examples of what D-Lab has done? Cite examples from the text to support your answer. *CCSS Reading 2*

Craft and Structure

- **Analyze Word Choice** This article includes the phrase "simpler is better." Find details in the article that support this idea. Why is simplicity an important part of the work Amy Smith does? *CCSS Reading 4*
- **Analyze Tone** How does the author of this article feel about Amy Smith and her work? Look for words and phrases that help you understand the author's attitude. Do you agree with the author? Explain. *CCSS Reading 4*

WRITING

Write a Biographical Sketch Conduct research to learn more about Amy Smith. Then write a short biography of her. Include information about her family, where she grew up, her personality traits, and important things she has done. If possible, find and use a quote from Amy.

ARTICLE: Someday

Magazine pages 13 - 15, Contemporary Realistic Fiction

Lexile Score: 710

Ada uses her imagination to invent things that solve problems and help her family and friends.

ESSENTIAL QUESTION

How do inventors use simple methods to invent things people need?

CORE CONTENT CONCEPT

English Language Arts Readers can learn about characters by paying attention to their actions, thoughts, and words,

CROSS-CURRICULAR EXTENSION

Art Have you ever thought, "I wish someone would invent that." Draw and describe an invention you wish existed. Make your drawing detailed and add notes and labels. Then present it to the class.

KEY VOCABULARY

laser-cutter (p. 14) a device that produces a narrow and powerful beam of light that is used to cut or slice objects

absorbent (p. 15) able to take in and hold liquid

PREPARE TO READ

Explain that many inventions are created to solve problems. Ask students if they have ever invented anything to solve a problem. Invite volunteers to share their inventions or ideas. Then tell them the next story is about a girl who invents things out of common objects on the spur of the moment.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- Why do you think this story is called "Someday"? Support your response with information from the text. *CCSS Reading 2*
- Describe Ada. What do her actions, thoughts, and words reveal about her? Use details from the text to support your response. *CCSS Reading 3*
- How does Ada use her skills to solve problems and to help others? Locate details in the text to support your response. *CCSS Reading 3*

Craft and Structure

- **Analyze Author's Purpose** Find details in the article that create an informal and humorous writing style. Is the author's purpose to entertain readers, to inform them, or both? Explain your thinking. *CCSS Reading 6*
- **Analyze Visual Information** What details from the text are also shown in the illustrations? What do the illustrations help you understand? *CCSS Reading 7*

WRITING

Write a Story Ada wants to be a great inventor someday. What would you like to do someday? Write about something you plan to do when you get older. How are you preparing for your future plan?

ARTICLE: Eat This Spoon

Magazine pages 16 - 19, Expository Nonfiction

Lexile Score: 950

Inventors in India are trying to replace plastic spoons with ones made out of food. They hope to reduce the amount of plastic waste in the world.

ESSENTIAL QUESTION

How do inventors use simple methods to invent things people need?

CORE CONTENT CONCEPT

Social Studies People have used and are using natural and human resources to produce goods.

CROSS-CURRICULAR EXTENSION

Social Studies Track the plastic items you and your family use and throw away in a week. Then come up with a plan to reduce the amount of plastic you discard. Share your plan with your family and your class.

KEY VOCABULARY

landfill (p. 17) an area where waste is buried under the ground

microbes (p. 18) an extremely small living thing that can only be seen with a microscope

decompose (p. 19) to cause something, such as dead plants and the bodies of dead animals, to be slowly destroyed and broken down by natural processes, chemicals, etc.

PREPARE TO READ

Have students look around the room and point out items made from plastic. These might include bags, games, and office supplies. Explain that plastic waste, plastic that is thrown away, is causing major pollution problems in the world. Tell students the next article tells about a plan to reduce plastic waste.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- Explain why plastic is a worldwide problem. Provide details from the article to support your response. *CCSS Reading 1*
- What makes the Bakeys spoon a useful and environmentally safe product? Support your answer with examples from the article. *CCSS Reading 1*
- Write a brief summary of the stages involved in making Bakeys' edible spoons. Cite details from the text in your summary. *CCSS Reading 2*

Craft and Structure

- **Analyze Text Features** Work with a partner to reread one section from the article. What main idea in this section does the heading hint at? Write the main idea. Then discuss how it connects to the heading. *CCSS Reading 5*
- **Analyze Text Structure** Peesapaty was deeply concerned about waste plastic. His concern caused a number of effects. Work with a partner to list the actions and events that resulted from Peesapaty's concern. *CCSS Reading 5*

WRITING

Write an Advertisement Create a magazine advertisement for the Bakeys company that will make restaurants and fast food establishments want to buy their spoons. Describe why the spoons are special and unique. Include details about the company, Peesapaty and Keskar, the ingredients, and the process. Create a clever slogan and include illustrations.

ARTICLE: 10 Uses for a Plastic Bottle

Magazine pages 20 - 21, Photo Essay

This photo essay shows a few of the many creative items that can be made using plastic bottles.

ESSENTIAL QUESTION

How do inventors use simple methods to invent things people need?

CORE CONTENT CONCEPT

Social Studies People have used and are using natural and human resources to produce goods.

CROSS-CURRICULAR EXTENSION

Recycle and Reuse What can you make with plastic bottles? Create one of the items shown in the article or use the internet to find other plastic bottle projects. After you've finished, share your project with classmates. Explain how you made it.

KEY VOCABULARY

fleece (p. 20) a soft cloth that is used to make warm clothes

greenhouse (p. 20) a building or part of a building that has glass walls and a glass roof and is used for growing plants

PREPARE TO READ

Show students a plastic bottle. Ask them if they ever drink out of plastic bottles. Then ask what they do with the empty bottles. Explain that the photo essay they are about to look at shows some unique things they can make out of plastic bottles.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- What was made from one plastic bottle? What was made using several bottles? Cite details from the photos to support your response. *CCSS Reading 1*
- What will happen if people continue to throw away plastic bottles every day? Use details from the article to support your response. *CCSS Reading 1*
- What important idea is the author trying to get across to readers? Support your response with details from the text. *CCSS Reading 2*

Craft and Structure

- **Analyze Author's Purpose** Authors write to entertain, to inform, to persuade, or to give an opinion. What is the main purpose of this photo essay? Does it have more than one purpose? Explain. *CCSS Reading 6*
- **Interpret Visual Information** Each photo in this article is accompanied by a caption. Would you understand the photos without the captions? How about the captions without the photos? Explain your reasoning. *CCSS Reading 7*

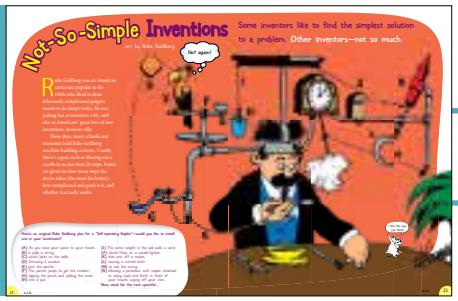
SPEAKING AND LISTENING

Present a Report Conduct research to learn about the Great Pacific Garbage Patch. Use these questions to guide your research: What is it and where is it? How was it formed? When was it first discovered? Why is it a problem and who is trying to solve the problem? Create a report that includes photos and other pictures. Then present your report.

ARTICLE: Not-So-Simple Inventions

Magazine pages 22 - 23, Expository Nonfiction

Lexile Score: 1180



This article is about a popular cartoonist from the 1920s named Rube Goldberg. Today, Goldberg is best known for his humorous drawings of complicated gadgets that perform simple tasks.

ESSENTIAL QUESTION

How do inventors use simple and inexpensive methods to invent things people need?

CORE CONTENT CONCEPT

Social Studies People have used and are using natural and human resources to produce goods.

CROSS-CURRICULAR EXTENSION

Science Make your own Rube Goldberg machine. First, think of a simple task—ringing a bell or popping a balloon, for example. Then, gather supplies to build your machine. Finally, share your machine and your process with the class.

KEY VOCABULARY

hilariously (p. 22) in a very funny way

pendulum (p. 23) a stick with a weight at the bottom that swings back and forth

PREPARE TO READ

Explain that Rube Goldberg was a cartoonist who enjoyed drawing gadgets. Share pictures and videos of Rube Goldberg machines (available online). Ask students what they notice about these machines. Finally, discuss why someone would make such machines.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- Why did Rube Goldberg draw complicated gadgets that perform simple tasks? Use details from the text to support your answer. *CCSS Reading 1*
- Why do you think people like to build Rube Goldberg machines? Support your ideas with details from the article and your own reasoning. *CCSS Reading 1*
- In a contest, what qualities must a Rube Goldberg machine have in order to win points? Cite details from the text to support your answer. *CCSS Reading 1*

Craft and Structure

- **Analyze Tone** What is the author's tone, or attitude, toward Rube Goldberg and his machines? Serious? Humorous? Critical? Which details in the text and pictures help convey this tone? *CCSS Reading 6*
- **Interpret Visual Information** How do the lettered objects and the text work together to explain how to make a "Self-operating Napkin"? Would the diagram be clear without the letters? Discuss with a partner. *CCSS Reading 7*

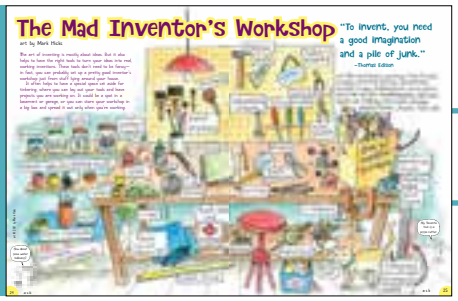
SPEAKING AND LISTENING

Explain a Procedure Without looking at the article text, use the Rube Goldberg diagram to explain to a partner how the "Self-operating Napkin" works. As you explain, have your partner follow along with the text. Then switch roles. How accurate were your explanations?

ARTICLE: The Mad Inventor's Workshop

Magazine pages 24 - 27, Expository Nonfiction

Lexile Score: 1170



Find out how to put together your own inventor's workshop with simple tools and common household objects.

ESSENTIAL QUESTION

How do inventors use simple and inexpensive methods to invent things people need?

CORE CONTENT CONCEPT

Social Studies People have used and are using natural and human resources to produce goods.

CROSS-CURRICULAR EXTENSION

Art What kind of workshop would you like to have—Woodworking? Sewing? Crafts? Machines and electronics? Create a poster showing the supplies and tools in your workshop. Include labels for these items.

KEY VOCABULARY

tinkering (p. 24) trying to repair or improve something, such as a machine, by making small changes or adjustments to it

prototype (p. 27) an original or first model of something from which other forms are copied or developed

PREPARE TO READ

Show photos of workshops and ask students if their parents or someone else they know has a workshop. Invite volunteers to tell about the workshops—what they contain and what is made in them. Explain that this article describes how to set up an inventor's workshop with stuff that you can find lying around the house.

CLOSE READING AND TEXT ANALYSIS

Key Ideas

- Why is it helpful to have "a special place set aside for tinkering"? Use details from the text to support your response. *CCSS Reading 1*
- What is a breadboard? Why is it a good idea for an inventor to use one? Use details from the text to support your response. *CCSS Reading 1*
- Write a brief summary of "Tips for Tinkering" on page 27. Cite details from the text in your summary. *CCSS Reading 2*

Craft and Structure

- **Analyze Word Choice** Work in a group to discuss the meaning of the quote from Thomas Edison on the top of page 25. Why is this a good quote to include in the article? How does the article show this idea? *CCSS Reading 4*
- **Interpret Visual Information** What do the illustrations in each section of the article help you understand? How do the illustrations and the text work together in each section? *CCSS Reading 7*

WRITING

Write a Story Write a story about a "mad" inventor. First, plan your story—the characters, the setting, and the problem and solution. Be sure to include details about the invention, the inventor's workshop, and the tools the inventor uses in your story. Also include a drawing of the invention.

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)*.

- What are some simple and inexpensive ways to help people get what they need? Use information from "Inventing with Less" and "Meet Amy Smith" to write a paragraph that answers this question.
- Combine the information in "Eat This Spoon" and "10 Uses for a Plastic Bottle" to explain ways people are cutting down on how much plastic they use and throw away. Make a list and add some of your own ideas about how you and your family can cut down on using plastic.
- Compare and contrast the types of things Ada in "Someday" invents and the types of things Rube Goldberg invented. How are they the same? How are they different?
- Review the articles "Someday," "10 Uses for a Plastic Bottle," and "The Mad Inventor's Workshop." In what ways are everyday items important to the theme of this issue?
- Use information from two or more articles to answer this question: How do inventors use simple methods to invent things people need?

EXPLORATORY LEARNING - FLEXIBLE MINI-UNIT DESIGN

ENGAGE | **READ FOR A PURPOSE** | **APPLY**

This mini-unit offers students the opportunity for an in-depth look at the simple but extremely useful inventions described in the magazine. Students will use the magazine articles to research the steps for creating one of these inventions. Then they will design and draw a poster that shows these steps.

ENGAGE: Engage students in the topic of inventions by first reviewing the Essential Question: How do inventors use simple methods to invent things people need? Remind students that the magazine articles describe many different inventions. Help students review these inventions and the simple ways they were constructed. Record responses in a chart like the one below. Students may need to go back to the magazine articles to help them remember the inventions and materials.

Simple and Inexpensive Inventions	Materials Used to Make the Invention
bottle light	clear plastic bottle, bleach, glue
Lego organizer	shoe organizer
edible spoons	sorghum, wheat and rice flours, water, rolling pin, spoon cutter, oven
birdfeeder	plastic bottle, wooden spoons, tool to make holes in bottle, string to hang bottle, birdseed

READ FOR A PURPOSE

INTRODUCE THE ACTIVITY: Invention Re-Creation Tell students that they will be creating posters that show how to make one of the inventions described in the magazine. Explain to students that their posters will include:

- a title, such as "Corn-cob Charcoal."
- a list of materials needed to create the invention.
- numbered steps for making the invention.
- detailed pictures showing the steps.
- captions and labels to help readers understand the information.

Allow students some time to go through the magazine articles and choose their inventions. Keep a list of the inventions students choose.

RETURN TO THE TEXT: Explain to students that before they can create their posters, they need to gather information from the magazine articles about their chosen inventions. Distribute a copy of the Poster Planner chart (p. 15) and have students reread the article that describes their invention. Tell students to use the chart to record information about materials used and steps taken to create the invention.

APPLY: INVENTION RE-CREATION Now that students have gathered information about their inventions, they are ready to begin creating their posters. Students should work independently.

MATERIALS

- completed Poster Planner charts
- blank paper
- pencils
- poster board or large sheets of paper
- colored pencils and markers

STEP 1: Build Background
Remind students that they will be making posters that show how to create the inventions they researched. Explain that posters should include the following:

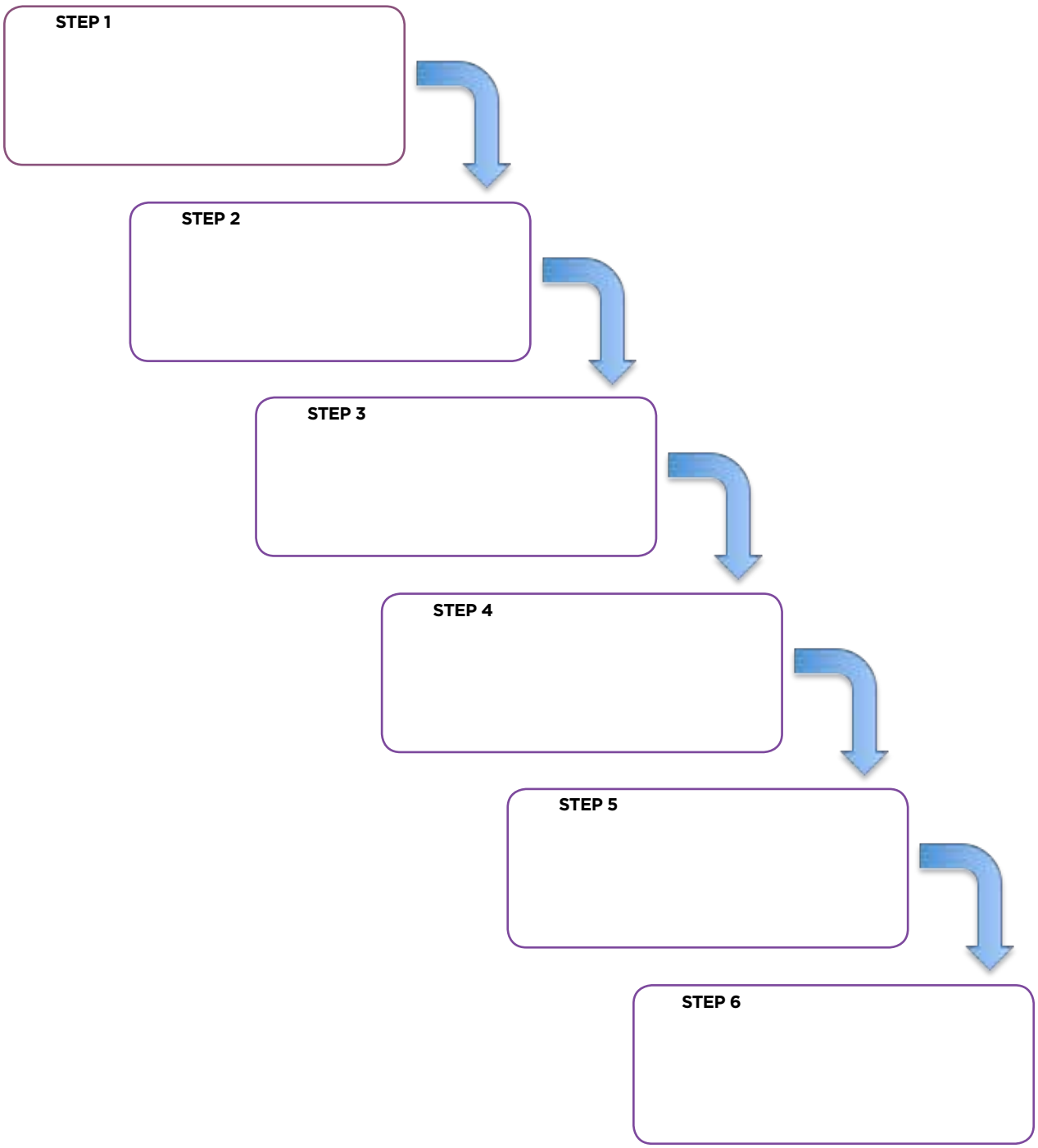
- a title
- a materials list
- numbered step-by-step directions for making the invention
- detailed pictures showing the steps
- captions and labels to help readers understand the information

STEP 2: Draft
Distribute blank paper to all students and tell them to begin sketching their posters. Remind them to refer to their Poster Planner charts to help them.

STEP 3: Revise and Edit
Have students exchange their work with an editing partner for feedback. Tell students to let their partners know if they need to provide more information or if anything seems unclear. Then have students incorporate the feedback they receive into their rough drafts and make any other necessary changes.

STEP 4: Share Posters
Have students share their posters by giving oral presentations. Provide students time to rehearse. Afterwards, have two or three volunteers gather the posters to display around the classroom or school for students to enjoy.

INVENTION RE-CREATION



POSTER PLANNER

Name of Invention _____

Article Title _____

Materials Needed

Steps for Making the Invention

Poster Checklist

My poster has:

- ☐ a title
- ☐ a materials list
- ☐ numbered steps for making the invention
- ☐ detailed pictures showing the steps
- ☐ captions and labels to help readers understand the information

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 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