Teacher's Supplement

JULY/AUGUST 2016

MAGAZINE ARTICLES

Monster Cities	
Expository Nonfiction	980L
Need a Lift?	
Expository Nonfiction	910L
Martian Metropolis .	
Expository Nonfiction	930L
Greetings from Marhi	elo
Expository Nonfiction	980L
Planning for a Warme	er World
Expository Nonfiction 1	010L

Teacher's Guide for *MUSE: City Life: What's Ahead?*

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OVERVIEW

Readers will learn that our current population explosion is beginning to affect how and where we live, and will continue to do so in extraordinary

ways. **MUSE: City Life: What's Ahead?** includes information about gargantuan cities, infrastructure concerns and the challenges of an increasingly warmer world. Furthermore, this issue explores the very real possibility of colonization on Mars and the trials that an off-planet civilization will endure.

ESSENTIAL QUESTION:

With the world's population rapidly rising, what measures will humans need to take to secure Earth's infrastructure?

Using This Guide

We invite you to use this magazine as a flexible teaching tool that is ideal for interdisciplinary learning of social studies and science content and 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 MULTIPLE ARTICLES PAGES 4 - 8

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





TEACH A MINI-UNIT PAGES 10 - 12

Magazine articles can be easily grouped to make cross-text connections and comparisons. Our Common Core mini-unit guides students to read and discuss multiple articles and integrate ideas and information (CCSS.ReadingInfoText.9). Discussing multiple articles (CCSS.SpeakListen.1, 2, 4) prepares students to write informational texts to share and publish in a variety of ways (CCSS.Writing.2).



READING

Core literacy concepts, such as the ones found in the Common Core State Standards, help students access social studies and science content. Integration of both literacy thinking and content study offers students a great way to become experts in reading informational text and literature for content knowledge. This guide provides questions to cover many core literacy concepts.

Draw Inferences (CCSS.InfoText.1) Describe Relationships (CCSS.InfoText.3) Analyze Text Structure (CCSS.InfoText.5) Interpret Visual Information (CCSS.InfoText.7) Summarize (CCSS.InfoText.2) Determine Word Meaning (CCSS.InfoText.4) Understand Author's Point of View (CCSS.InfoText.6) Explain Reasons and Evidence (CCSS.InfoText.8)

FOCUS STANDARD: CCSS.InfoText.9: Integrate Ideas and Information Have students read multiple articles on the same topic from this magazine to build knowledge and make cross-text comparisons.

SPEAKING AND LISTENING

Use the articles in this magazine to spark meaningful discussions in person and online. Encourage deeper discussions where students can become topic experts (*CCSS.SpeakListen.1, 2, 4*).

DISCUSSION OPTIONS-IN CLASS OR ONLINE

Article Clubs: Form small reading groups of students reading the same article. Have students discuss the content, share ideas, and critically evaluate the text.

Jigsaw Clubs: Form small reading groups of students reading *different* articles. Invite students to share information and resources with each other.

Whole Class: Launch with the essential question. Encourage students to find and share evidence from different articles to build a greater understanding of the question.

WRITING

Use the articles in this magazine to prompt **informative/explanatory writing** (*CCSS.Writing.2*). Have students use evidence from the texts to share information about social studies, language arts, or science content. See the **Mini-Unit** section of this guide (pgs. 10 – 12) as well as the **Article Pages** (pgs. 4 - 8) for ways to incorporate writing into your instruction.





ARTICLE: Monster Cities

Type: Expository Nonfiction Magazine pages 9 - 13



Delve into this article to learn how monster cities are quickly stomping out suburban living. With world populations on the rise, megacities are multiplying. Will these colossal urban settlements provide unique economic and social opportunities or ultimately create new problems for their inhabitants?

ESSENTIAL QUESTION

With the world's population rapidly rising, what measures will humans need to take to secure Earth's infrastructure?

SCIENCE CONCEPT

Living things affect the physical characteristics of their regions.

CROSS-CURRICULAR EXTENSION

Social Studies

Conduct research to find out what life is like in one of the megacities mentioned in this article. Share what you learn with your classmates.

KEY VOCABULARY

gargantuan (p. 10) very large in size or amount

unprecedented (p. 13) not done or experienced before

PREPARE TO READ

Have students work in small groups to compare suburban and urban living. Suggest they consider transportation, housing, the variety of goods available for purchase, schools, public services, and the ways people socialize and have fun. Discuss how these elements might be affected by overpopulation.

CLOSE READING QUESTIONS

- Underline the reasons given for the rapid increase in the number of monster cities.
- Highlight sentences in the article in which the author connects the disciplines of sociology and mathematics.
- How does a big city become a monster? Cite text details to support your answer.

COMMON CORE CONNECTIONS

Interpret Visual Information CCSS Reading 7

Examine the graphic features on pages 11 and 13. How do they help you understand important ideas in the article?

Describe Relationships CCSS Reading 3

Study the relationship between the increasing population and the rise in gargantuan cities. What are some of the challenges that this correlation exposes?

Write Arguments CCSS Writing 1

Why are more people than ever living in cities, despite obstacles that negatively affect quality of life? Support your answer with information from the text as well as your own thoughts.

ARTICLE: Need a Lift?

Type: Expository Nonfiction Magazine pages 14 - 16



Big cities will soon boast supertall and megatall skyscrapers. Engineers are busy rising to the challenge of creating high tech elevators to help people reach these new heights.

ESSENTIAL QUESTION

With the world's population rapidly rising, what measures will humans need to take to secure Earth's infrastructure?

SCIENCE CONCEPT

The engineering design process begins with the identification of a problem.

CROSS-CURRICULAR EXTENSION

Math

Conduct research to find the 10 tallest buildings in the world. Then graph the heights of these buildings.

KEY VOCABULARY

contemplate (p. 15) to think deeply about

monitor (p. 15)

to observe something over time for a special purpose

levitation (p. 16)

the process of rising

PREPARE TO READ

Hold a class discussion on elevators. Invite volunteers to describe the tallest buildings they have been in. Discuss reasons why building extremely tall buildings might be a good idea. Finally, ask if riding elevators in these extra tall buildings seems safe or scary.

CLOSE READING QUESTIONS

- Underline three problems and solutions described in the article. Then summarize them.
- Highlight reasons why more and more tall buildings are being constructed.
- Does the tone of the article indicate that the author feels hopeful or doubtful about overcoming engineering issues with technology?
 Cite details to support your answer.

COMMON CORE CONNECTIONS

Summarize Main Ideas CCSS Reading 2

Write the main idea of each section in the article. Exchange your main ideas with a partner and see if you agree with each other about what they are. If not, work together to create a set of main ideas you both agree on.

Write Using Research CCSS Writing 2 & 6

Work with a group to research and report on ways architects and engineers are using smart technology to improve buildings and overcome engineering challenges. Use photos, illustrations, or other media as part of your report.

Analyze Reasons and Evidence CCSS Reading 8

The author states that smart elevators and other developments in high tech engineering are going to be essential to our future. Find 2-3 sections of the text where the author makes a statement and then provides evidence to support her assertion. Create an outline of each section. **ARTICLE:** Martian Metropolis

Type: Expository Nonfiction Magazine pages 20-23



What should you expect if you want to become one of the first inhabitants of a Martian colony? In this article you will learn about the food you'll eat, your living arrangements, and the physical obstacles and fatal dangers you'll need to overcome.

ESSENTIAL QUESTION

With the world's population rapidly rising, what measures will humans need to take to secure Earth's infrastructure?

SCIENCE CONCEPT

Humans depend on Earth's land, ocean, atmosphere and biosphere for many different resources.

CROSS-CURRICULAR EXTENSION

Social Studies

Compare the issues the Martian settlers will face with the hardships faced by early colonists in what is now the United States. Create a chart for this information.

KEY VOCABULARY

colonize (p. 22) to take control of an area and send people to live there

geothermal (p. 22) using the natural heat produced inside the Earth

PREPARE TO READ

Discuss with students what living in a colony on Mars would be like. Brainstorm and record ideas about living quarters, food, work, and socializing. Ask students what hardships and benefits might exist. Then tell them to compare their ideas to those they read about in this article.

CLOSE READING QUESTIONS

- How will radiation affect humans on Mars? Use text details to support your answer.
- Underline details that explain why Mars is our best option for off-planet living.
- Imagine you and your family are packing your spaceship to go to Mars. Use article
 details to help you list the important items you will need to bring.

COMMON CORE CONNECTIONS

Analyze Reasons and Evidence CCSS Reading 8

Use information in this article to compare the scenery, temperature, light, and dangers on Earth and Mars.

Draw Inferences CCSS Reading 1

The author states that NASA, in additional to several private companies, aims to send settlers to live on Mars permanently by the year 2030. With a partner, highlight sections of the text where the author draws inferences about how humans will live on Mars. Use these details to imagine and write a diary entry about a typical day on Mars.

Write Arguments CCSS Writing 1

Would you be willing to be among the first group of humans to colonize Mars? Use details from the text and your own thoughts and feelings to answer this question.

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ARTICLE: Greetings from Marhielo

Type: Expository Nonfiction Magazine pages 32-35



Learn how middle school students designed an imaginary island city, addressed environmental and waste issues, and won awards in the 2016 Future City Competition.

ESSENTIAL QUESTION

With the world's population rapidly rising, what measures will humans need to take to secure Earth's infrastructure?

SCIENCE CONCEPT

Observations made while testing proposed explanations can provide new insights into phenomena.

CROSS-CURRICULAR EXTENSION

Scaling in Mathematics

Research the heights of some buildings in your town. Use scaling to convert their heights to model sizes.

KEY VOCABULARY

innovative (p. 33) using or introducing new ideas or methods

compostable (p. 35) able to become a decayed mixture

PREPARE TO READ

Help students brainstorm ideas about how they could make their town a better place—what challenges does the town have? What kinds of changes could improve life for everybody who lives in their town? List ideas on the board. Then explain that students are about to read about some middle schoolers who used math and science to try to make the world a better place.

CLOSE READING QUESTIONS

- Underline details that explain how the students from New Lebanon prepared for the competition.
- How did the students use math and science in the creation of Marhielo? Support your answer with text details.
- Which part of this competition seems most difficult? Cite details from the article in your answer.

COMMON CORE CONNECTIONS

Present Research CCSS Speaking & Listening 2 & 4

With a partner, interview the mayor or a member of your town council to find out about the challenges of running a town. Create a list of questions to ask. At the interview, record the answers. Write up the interview and share it with your class.

Analyze Author's Point of View CCSS Reading 6

What is the author's opinion about the Future City project? Does she believe it is a good idea, an overrated activity, or just not very important? Use text details to support your answer.

Write Arguments CCSS Writing 1

Conduct online research to find out how you can promote waste reduction and recycling at your school. Choose a few ideas and write a short editorial in which you offer an opinion about why your school should implement these ideas. Support your opinion with facts.

ARTICLE: Planning for a Warmer World

Type: Expository Nonfiction Magazine pages 40-45



Rising global temperatures are causing more extreme weather conditions, adding stress to our wastewater systems, roads, bridges and energy sources. Learn how engineers are working on ideas to head off future problems.

ESSENTIAL QUESTION

With the world's population rapidly rising, what measures will humans need to take to secure Earth's infrastructure?

SCIENCE CONCEPT

Human decisions and activities have had a profound impact on the physical environment.

CROSS-CURRICULAR EXTENSION

Social Studies

Conduct research to learn ways that climate has affected infrastructure. Consider roads, bridges, water supply, sewers, electric grids and telecommunications.

KEY VOCABULARY

corroded (p. 43) broken apart or destroyed through a chemical process

PREPARE TO READ

On the board, create a K-W-L chart about global warming. Ask students what they know about global warming and fill in this section with their responses. Then ask them what they want to learn or think they will learn about global warming. Add these questions to the chart. Finally, tell students they will fill in the last column after reading this article.

CLOSE READING QUESTIONS

- Underline some of the solutions described in this article.
- What does the author mean when she writes "the future won't be much fun if we don't reinforce the underlying framework that helps communities hum along"?
- How serious is the infrastructure problem? Support your ideas with story details.

COMMON CORE CONNECTIONS

Summarize Main Ideas CCSS Reading 2

With a partner, choose the section in this article that you find most interesting and write a brief summary of it. Then create a question based on the ideas in this section that you can investigate further.

Describe Relationships CCSS Reading 3

Study the relationship between global warming and issues with our infrastructure. Why does this correlation exist?

Write Explanations CCSS Writing 7

Use what you learned about global warming to answer the questions in the prereading chart and fill in the last column. Are you able to answer all the questions? If not, research the answers.

CROSS-TEXT CONNECTIONS WITH MULTIPLE ARTICLES

COMPARE ARTICLES

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

- The articles "Monster Cities" and "Need a Lift?" both address problems created by the unprecedented population growth the world is now experiencing. What solutions are presented in these articles? Do you believe these solutions are adequate? Support your answer with details from the texts.
- Many of the articles in this issue of *Muse* assert that humans will need to dramatically alter how and where they live in the near future. What are the social, environmental and structural issues that are making these changes necessary?
- "Greetings from Marhielo" and "Planning for a Warmer World" both discuss the issue of global warming. How are these articles similar and different in the ways they approach this issue? Do the articles deliver the same amount of information and entertainment for the reader? Which text did you prefer and why?
- Reread the feature articles and highlight sections that contain mathematical and scientific concepts. Examine the interconnectedness of mathematics and the sciences. List the reasons that this information overlaps. Additionally, are there other fields of study represented in this issue of *Muse*?
- Use information from the feature articles to locate the manmade and natural sources of risks to our infrastructure. Why do we need to be diligent in taking better care of our planet and ourselves in order to secure a quality future? What steps can we take individually and as a society to address these risks?

EXPLORATORY LEARNING - FLEXIBLE MINI-UNIT DESIGN

This mini-unit is designed as a flexible teaching tool that can be taught in any order. It lends itself well to the articles mentioned within or you may choose to substitute your own selection of articles. It would be beneficial to gauge the interest level of your students when determining your focus.



Share the essential question:

With the world's population rapidly rising, what measures will humans need to take to secure Earth's infrastructure?

READ AND COMPARE ARTICLES: Begin with a focus article as a base for building content knowledge and model how to work through the text.

1) READ ALOUD: Use "Monster Cities" (pgs. 9-13) as a focus article, or choose a different article that works well for your teaching goals. Share the article summary on page 4 of this guide. Students can read their own copies of the article and use sticky notes to mark places they find interesting or have questions about.

2) DISCUSS THE ARTICLE: After reading "Monster Cities," guide students to talk about the article. See the Article Pages for Close Reading Questions to enhance the material.

3) READ NEW ARTICLES: Help students choose additional articles to read based on their inquiry questions or what they find interesting. Refer to the Article Pages for summaries of each article within *Muse: City Life: What's Ahead?*

4) COMPARE ARTICLES: After students have read multiple articles, guide them to make cross-text connections. Refer to page 9 to compare articles using prompts that help students integrate ideas and information.

CHOOSE A PURPOSE FOR READING

CLOSE READ *CCSS Reading Info Text 1* Mark the text, noting important details and highlighting what interests, surprises, or confuses you.

UNDERSTAND MAIN IDEAS TO DEVELOP EXPERTISE *CCSS Reading Info Text 2* Record the main ideas in a second article. Note how these main ideas build on the main ideas from the focus article. How is your topic knowledge growing?

REVIEW GRAPHIC FEATURES *CCSS Reading Info Text 7* Examine graphic features within this issue and describe how the images, charts, and photographs enhance your understanding of the content.

SMART TECHNOLOGY AND HIGH-TECH PROBLEMS: Focus on the essential question ("With the world's population rapidly rising, what measures will humans need to take to secure Earth's infrastructure?") and return to the feature articles to formulate possible responses. Divide the class into different groups to discuss, debate and study different facets of this question. Use the activities below to further immerse your students in the material presented in this issue of *Muse*.

- **Group One:** Have students compare and contrast "engulfer cities" and "exploder cities" as discussed in the "Monster Cities" article. Students should first reread the text and highlight any passages that contain relevant information for completing this task. Next, students should explain why monstrous urban growth generally follows one of these two patterns of development. They can use the Venn diagram in the Printables section to help them organize their ideas. Have groups share their ideas with the class.
- **Group Two:** Have students use the Concept Chart from the Printables section of this guide to demonstrate how reading multiple articles in this issue of *Muse* developed their understanding of the essential question. After this group completes the graphic organizer, have students convert the information into essay form. Pose these questions to students: Why is it beneficial to read several articles with varying focuses on the same topic? How does it help to expand your general knowledge of the subject matter? Share with the class.

• **Group Three:** Have students focus on "Martian Metropolis," which discusses the advantages and disadvantages of colonizing Mars. Help students understand that there is an undeniable excitement as well as an inherent danger surrounding the possibility of living on Mars. Have groups compile lists of the pros and cons about colonizing Mars, using information from the article and their own research and opinions. Have groups present the information to classmates as a debate.

NAME: ____

CONCEPT CHART

With the world's population rapidly rising, what measures will humans need to take to secure Earth's infrastructure?

ESSENTIAL QUESTION OR INQUIRY QUESTION:

ARTICLE 1:	ARTICLE 2:	ARTICLE 3:



NAME: _____

ANALYZE GRAPHIC FEATURES

PAGE LOCATION	HOW THIS FEATURE HELPED YOUR UNDERSTANDING
	PAGE LOCATION



colonize to take control of an area and send people to live there

The cheapest way to **colonize** will be to make everything we need there. (p. 22)

compostable able to become a decayed mixture

We have eliminated traditional oil-based plastics entirely, opting instead for **compostable** bioplastics made from corn, starch, and keratin from chicken feathers. (p. 35)

contemplate to think deeply about

Okay, maybe they [elevators] aren't the most exciting things to contemplate. (p. 15)

corroded broken apart and destroyed through a chemical process

Recently, **corroded** lead pipes in Flint, Michigan led to disaster. (p. 43)

gargantuan very large in size or amount

As the world's urban areas continue to grow, some will become grossly **gargantuan** in size. (p. 10)

geothermal using the natural heat produced inside the Earth

The best sources will be solar, **geothermal**, and wind, as there's no oil or gas on Mars. (p. 22)

innovative using or introducing new ideas or methods

Students picked a real or imaginary city for which to design an **innovative** solid waste management system that is safe, environmentally sound, and energy efficient. (p. 33)

levitation the process of rising

Instead, it uses magnetic levitation technology. (p. 16)

monitor to observe something over a period of time for a special purpose

That's why software engineers are working on cloudbased programs that would capture and analyze data in real time from the thousands of sensors and systems that **monitor** how well elevators are functioning. (p. 15)

unprecedented not done or experienced before

Today, progress in the information and communication sciences can grow a city to an **unprecedented** size. (p. 13)

"Need a Lift?"

• <u>http://www.digitaljournal.com/technology/thinking-outside-the-box-the-elevator-of-the-future-is-here/article/464694</u>

This article supplies information on the future of elevators that use smart technology.

"Martian Metropolis"

 http://learning.blogs.nytimes.com/2014/10/21/will-humans-live-on-marssomeday/?_r=0

This site includes an introduction and a link to a *New York Times* article about a NASA-funded project that uses simulation to study how people might live on Mars. It also includes questions for students to think about and answer.

"Greetings from Marhielo"

<u>http://futurecity.org/</u>

This link is the official website for the Future City Competition. It is a comprehensive site that includes activities and information for students, parents and teachers.

"Planning for a Warmer World"

<u>http://www.neok12.com/Global-Warming.html</u>

This link provides a variety of age-appropriate videos addressing the issues and effects of global warming.