



Expanded Edition

EDUCATOR'S GUIDE

www.7MC.com



LITERACY AND SCIENCE CONNECTIONS TO COMMON CORE STANDARDS

DEVELOPED BY GRACE NALL

GRADES 4 AND UP

CONTENTS

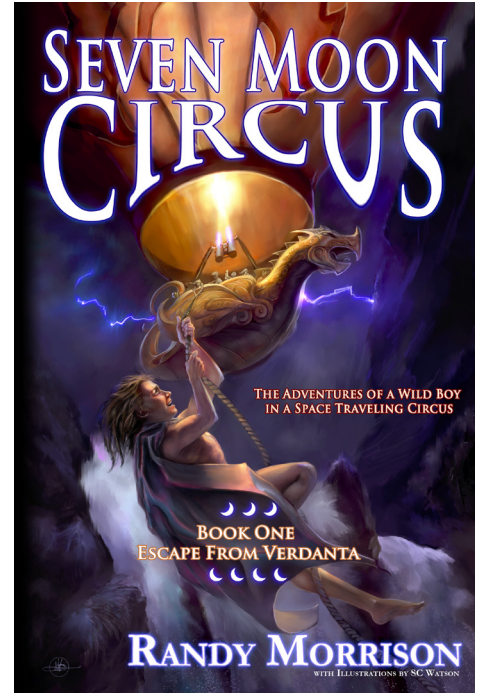
- Page 1:* How Authors Get Their Ideas
The Quagga Research
- Page 2:* Argumentative Writing
What's Your Point of View?
- Page 3:* Create Your Own Gateway
Fantasy
- Page 4:* Science – Explore the Effect
of Heat on Air
Teacher Demonstration:
Make a Hot Air Balloon
- Page 5:* Critical Thinking Questions
Adjectives Galore
- Page 6:* Context Clues
Word Study

ENGAGE STUDENT LEARNING

Motivate your students by bringing *Seven Moon Circus – The Adventures of a Wild Boy in a Space Traveling Circus* – into your classroom.

COMMON CORE STANDARDS

Explore an outer space experience using differentiated instruction to make connections with the common core standards in language arts and science. Energize student imagination in persuasive writing using research and technology to learn about the quagga, an extinct species of zebra, and a real candidate for revival.



HOW AUTHORS GET THEIR IDEAS: THE QUAGGA RESEARCH



A NOTE FROM AUTHOR RANDY MORRISON:

The first draft of *Seven Moon Circus* was nearly complete when I stumbled upon a newspaper story about Reinhold Rau, the founder of The Quagga Project. That group aims to revive the quagga, an ex-

tinct zebra. “By selective breeding from a selected founder population of Southern Plains Zebra an attempt is being made to retrieve at least the genes responsible for the quagga’s characteristic (brown and tan) striping pattern.” As I learned more about this project, I became deeply fascinated by the real possibility of revival from extinction, whether by selective breeding or cloning. Eventually I dumped much of the original story line and rewrote the story to make a resurrected quagga one of the new stars of the circus.

You can use the quagga element of

the story to introduce important life science themes and concepts, such as extinction, revival, bio-engineering, species and subspecies, and how the discovery of DNA helps us understand life. This “de-extinction” topic would make a great critical thinking activity, encouraging your students to do some research, weigh the pros and cons, and then reach and defend their opinion about whether we should revive extinct species.

I sincerely hope you and your reader students will find *Seven Moon Circus* not only a fun read, but also a gateway to learning, creative thinking, and future possibilities.



ARGUMENTATIVE WRITING

READING AND INTEGRATION OF KNOWLEDGE AND IDEAS

COMMON CORE STANDARD RI. 5.8

“Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which points.”

Argumentative writing requires students to research questions or topics which may be considered controversial. They will need to support their point of view with evidence or facts from their research. Students should be aware that not all website information is factual.

Students should check AT LEAST three sources (internet, books, recent news coverage, etc.) for their research. Photos should also be cited.

RESOURCES ON DE-EXTINCTION (REVIVAL FROM EXTINCTION)

If links do not work, try copy and pasting.

Reviving the Quagga Zebra Through Selective Breeding:
www.quagga-project.org

Photos and Paintings of the Quagga:
www.images.google.com (enter “quagga” into search field)

National Geographic April 2013 cover article: Reviving Extinct Species:
www.nationalgeographic.com/deextinction

Reviving the Dodo:

<http://science.howstuffworks.com/zoology/dodo.htm>

Resurrection Science:

http://eqhd.ca/index.php?option=com_content&view=article&id=466:resurrectionscience&catid=20:catr&Itemid=3

Bringing Back the Gastric Birthing Frog:

<http://www.popsoci.com/science/article/2013-03/scientists-resurrect-bonkers-extinct-frog-gives-birth-through-its-mouth>

Resurrection Biology:

<http://science.kqed.org/quest/2013/03/25/resurrection-biology-the-reality-of-bringing-back-extinct-species/>

Resurrection Science – Bringing Extinct Species Back to Life:

<http://vimeo.com/60822204>

Reviving Dinosaurs:

<http://english.pravda.ru/science/earth/22-08-2011/118814-dinosaurs-0/>

Mother Nature Network: 14 Extinct Animals that Could Be Resurrected (including Neanderthal hominids):

<http://www.mnn.com/earth-matters/animals/photos/14-extinct-animals-that-could-be-resurrected/fit-to-be-cloned>

Can the tarpan be revived?

<http://www.smithsonianmag.com/science-nature/galloping-200711.html>



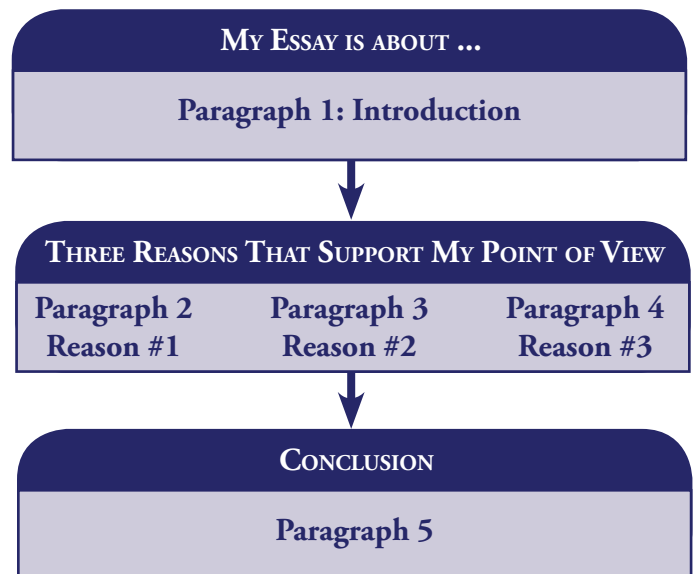
WHAT'S YOUR POINT OF VIEW?

COMMON CORE STANDARD Writing W.5.1 -

“Write opinion pieces on topics or texts, supporting a point of view with reasons and information.”

Student Activity: Write a five-paragraph essay choosing ONE of the critical thinking questions below.

1. Do you think it is possible to revive an extinct species, such as the quagga? Would you revive any extinct species? If yes, which species? Why or why not?
2. What are the causes and effects of taking a species from its natural environment or habitat? In the 7MC story, was it right to take Marz out of the Cloud Forest? Was he taken against his will?





CREATE YOUR OWN GATEWAY FANTASY STORY

Story elements are the foundation of any story and include: a main character (protagonist or hero), supporting characters, an evil or opposing character (antagonist), the setting (place, time, season, environment), a plot, a problem, and a solution.

lem or achieve a difficult goal. In many gateway fantasy stories, the hero has or finds some buddies to join them on the great journey. Often the hero is young and powerless, and gets drawn into a “good versus evil” battle with some far more powerful force.

attempts to thwart her at every step. The Munchkins send her on a quest to meet the Wizard. Along the way she meets her buddies the Tin Man, the Cowardly Lion, and the Scarecrow. They help her find the Wizard, and he gives her the secret knowledge about how to get back home (the “ruby slippers” trick).

In a gateway fantasy, a main character (often an orphan) is first shown in his or her normal world. Then something strange or unusual happens—usually caused by forces beyond the hero’s control—that transports him or her to a new and completely different world. Once there, the hero must learn how the new world works and confront some prob-

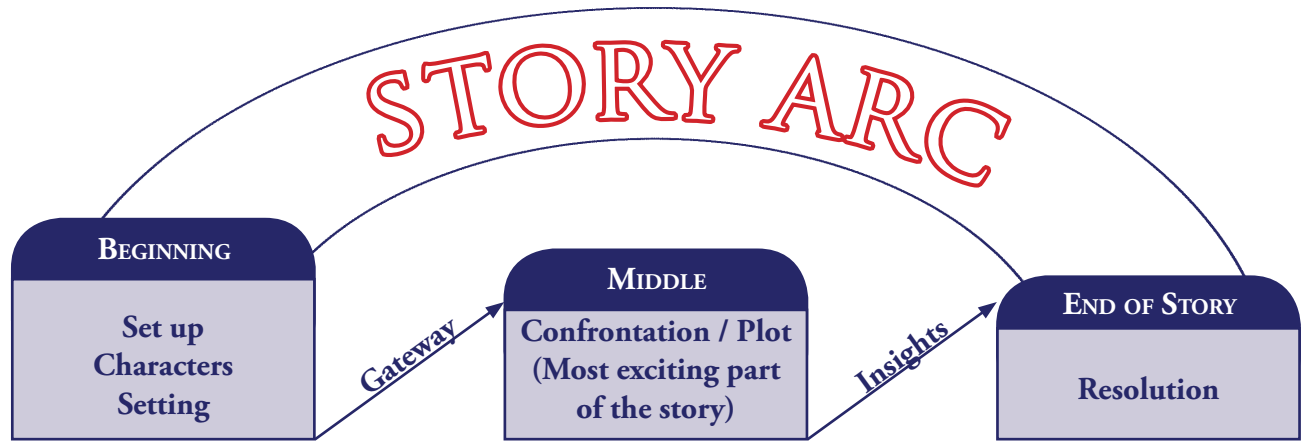
A famous example: In *The Wizard of Oz*, orphan girl Dorothy has a dog named Toto. For them, the “normal world” is a Kansas farm. They are carried away by a tornado (the gateway) that takes them to The Land of Oz (new world). She immediately announces her goal: to get back home. Her main obstacle is the Wicked Witch of the West, who

More examples of gateway fantasies: *Back to the Future*, *Harry Potter*, *Big* (Tom Hanks movie), *Gulliver’s Travels*.

For more gateway fantasies, visit www.7MC.com/gateways.

Student Assignment: Create your own gateway fantasy story. Begin by using the graphic organizer below to brainstorm your story elements.

Title of your Gateway Fantasy Story:



Main Character:	Goal:	Solution / Victory / Lessons Learned:
_____	_____	_____
What does the Main Character want?		

Minor Characters:	Obstacles or Problems (at least three):	
_____	_____	_____
Setting:		

Gateway to another world:		



SCIENCE: EXPLORE THE EFFECT OF HEAT ON AIR

Hot air balloons use a gas burner to heat the air inside the balloon (sometimes called the “envelope”). As the air heats, it expands and becomes less dense, which causes the balloon to rise. The pilot of a hot air balloon can cause it to ascend or descend by adjusting the burner flame, hotter flame for higher and lower flame (or no flame) to return to earth. But the pilot has almost no control of where the balloon goes horizontally: the wind currents are in control.

CRITICAL THINKING ESSENTIAL QUESTION:

In the Seven Moon Circus story, how is the Jefferson Spitfire hot air balloon different from all other balloons?

ANSWER:

It is equipped with a three-fingered mechanical claw, attached to a winch, that makes targeting landings possible.



TEACHER DEMONSTRATION: MAKE A HOT AIR BALLOON

CONNECTION TO SEVEN MOON CIRCUS:

From 7MC Chapter 1:

“Let’s find out.” Her dad’s voice was firm, but warm. “Stand aside, kids!” He yanked on the control lines connected to the parachute valve at the top of the balloon. It burped a bit of hot air, jostling their passenger basket. When he shut off the main burner, the balloon began slowly drifting down toward the forest, whispering softly in the nippy clouds.

The 7 Moon Circus Team

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Educator’s Guide © 2013 Randy Morrison;
quagga painting © 2013 SC Watson.

ADULT SUPERVISION REQUIRED

SAFETY WARNING: DO NOT USE OPEN FLAME

MATERIALS NEEDED:

- 2 sheets of differently-colored tissue paper (each trimmed to 26” by 18”)
- 1 manila file folder (for template)
- 5 pipe cleaners
- Scissors, Tape, Ruler, Stapler
- Hair Dryer (low setting)

STEP 1:

CREATE A BALLOON PANEL TEMPLATE

1. Unfold the manila file folder
2. Place the ruler on the folder edge and measure 13.5 inches in length.
3. Estimate 22.5 degrees and measure another 13.5 inches.
4. At the end of each point, trace a rounded curve.
5. Cut the perimeter.

STEP 2:

CREATE A BALLOON

1. Fold each tissue paper into fourths. It should end up looking like a rectangle.
2. Take the balloon template and place it over the tissue paper. Trace and cut into 4 pieces.
3. Connect the edges of 4 pipe cleaners. It should end up looking like a T-intersection.
4. Place a pipe cleaner in the middle of each tissue paper.
5. The 5th pipe cleaner is the base. Connect the tips to form a circle. Take the tips of the 4 pipe cleaners and connect it to the base.
6. Shape or “mold” the tissue paper over the pipe cleaner to form a “bowl or balloon.”
7. Tape and staple the tissue paper over the base as needed. Make sure the hole of the base remains open.
8. Have a student gently hold the top of the balloon as you hold the base. Place the hair dryer under the base and turn it on to the “low” setting. Watch the balloon rise.

COMMENTS

Author Randy Morrison welcomes comments from teachers, parents,

librarians and readers. Send them to: author@7MC.com.



CRITICAL THINKING QUESTIONS

- **Chapter 1– WILD:** If you were Marz, would you choose to stay in the Cloud Forest or go with Hawken Family from Seven Moon Circus? Why or why not? Explain your reasoning.
- **Chapter 2– BLUEMIST:** Was it right for the circus family to take Marz out of the Cloud Forest? Why or why not?
- **Chapter 3 - MAI-KELLINA:** What is the plan of Mai-Kellina and the “deep male voice” coming from the Quicksilver Messenger?
- **Chapter 4 - QUAGGA:** Compare and contrast the life experiences of SunKing the quagga and Marz the Wild Boy.
- **Chapter 5 - DONOVAN :** What is Crestival? Why is that a good time for a royal wedding?
- **Chapter 6 - HURRICANE:** Why are Elizabelle and her family searching for Marz and the quagga?
- **Chapter 7 - CAVES:** Why does Hurricane blind-fold the quagga?
- **Chapter 8 - CONVERTICOPTER:** How has Marz changed the direction of the story? Use evidence from the text to support your answers.
- **Chapter 9 - LOOPER:** Predict what will happen once the Hawken Family is taken to see Mai-Kellina?
- **Chapter 10 - REUNION:** Is the quagga the key for the most spectacular circus show? Or is it Marz? Or both together? Why?



ADJECTIVES GALORE

CONTENT STANDARD Writing W 5.3d -

“Use concrete words and phrases to convey experiences and events precisely.”

Adjectives describe nouns.

Student Activity:

1. Choose words from the Word Bank to fill in the blank spaces in the passage from Seven Moon Circus. You can check your answers by referring to page 8 from the book.
2. Think of your own words. Revise the writing below and replace the words with your OWN vivid adjectives. Check your answers by reviewing Chapter One.

WORD BANK

precious

green

new

bright

creaking

crazy

The _____ *adjective* sound of trees bending in the breeze jolted Elizabelle back into the present. In the forest, far below their balloon, the _____ *adjective*, _____ *adjective-color* leaves seemed to glow in the mist, signaling hope that somehow they might find their _____ *adjective* beast, their _____ *adjective* star performer who would bring the Crestival crowd to their feet, chanting and cheering. Maybe the king’s invitation and her _____ *adjective* plan just might succeed. Somehow Seven Moon Circus might be saved.



CONTEXT CLUES TO DISCOVER THE MEANINGS OF WORDS

- **COMMON CORE STANDARD Reading Language 5.4:**
“Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.”
- **COMMON CORE STANDARD Reading Fluency 5.4:**
“Use context to confirm or self-correct word recognition and understanding, re-reading as necessary.”
- **COMMON CORE STANDARD Language – Vocabulary Acquisition and Use L5.5c:**
“Use the relationship between particular words (e.g. synonyms, antonyms, homographs) to better understand each of the words.”

Context clues, in a sentence or paragraph, help us figure out the meanings of words. Some words have multiple meanings. The correct word definition can be determined by looking at the following context clues:

1. Look for the definition within the text. The word, “or,” can be found in the same sentence.
2. Synonym context clues.
3. Antonym context clues.

BE A DETECTIVE!

Some of the names in 7MC are based on real places or things. Do some internet research to find the real: Baraboo, Tulamarine, Aldebaran, Amarna, Jefferson Spitfire, Karoo, Kokomo, Tambora, Red River Valley.

WORD	PAGE	SENTENCE	TYPE OF CONTEXT CLUE	MY THOUGHTS
		<i>(Circle the word. Underline the Context Clues).</i>	<ul style="list-style-type: none"> • Defined in the text • Synonym (same meaning) • Antonym (opposite meaning) 	<i>Based on the context clues, the word could mean ...</i>
Example: splotchy	5	<i>“Skin seems splotchy. It could have some kind disease, or ...”</i>	<i>Synonym context clue</i>	<i>The word “splotchy” could mean something unusual looking on the skin.</i>
liger (Page 10)				
scintillate (Page 30)				
acrid (Pages 83, 89)				



WORD STUDY: UNUSUAL AND MADE UP NEW WORDS

7MC contains many unusual and made-up words. Try to figure out their meaning from the context, the way they are used in the story.

CHAPTER 1	CHAPTER 2	CHAPTER 3	CHAPTER 4	CHAPTER 5	CHAPTER 6	CHAPTER 7	CHAPTER 8	CHAPTER 9	CHAPTER 10
curlibirds	Pincher	pierce-light	groatmush	Gabania	New Roma	dokon	lunabus	body mold	EVA
Crestival	trimmer	view-gem	bugfeast	face molder	Buzzard	vertijet	decoy birds	Ol’Terra	hoop-ti-diddle-o
	Bluemist	relay looper	fop	light-frame		chameleon-suit	kadar	GV	
		Quicksilver-Messenger	zedonk			toolachies			
			tranco dart						