A BLACK HOLE IS NOT A HOLE
by Carolyn Decristofano

2014 Louisiana Young Reader's Choice Nominee
Grades 6-8
Submitted by Chely Cantrell, Branch Manager,
Ouachita Parish Public Library

Title: *A Black Hole is Not a Hole*
Author: Carolyn DeCristofano
Publisher: Charlesbridge Publishing
Pages: 80

SUMMARY
Carolyn DeCristofano takes the concept of black holes, dissects its features and properties, and explains them in terms that a young person can more easily understand. Her use of detailed illustrations and real-world analogies make this grand concept more accessible.

AUTHOR'S BIOGRAPHY
Carolyn DeCristofano combines her love of writing and science in her books. She is a former teacher who has worked with teachers, museum educators, and educational researchers on fascinating projects. Although science, education, and writing are exciting to her, she also thinks it's important to develop an interesting life outside of work. She and her husband Barry enjoy traveling, hiking, reading, and playing games together. She also volunteers for her town government, knits, cooks, and dabbles with watercolor paints. Best of all, she spends time with her friends and family, who range in age from toddlers through eighty-year-olds.

Biographical information taken from the author's website at
http://www.carolyndecristofano.com/about/,
Accessed August 27, 2014.

AWARDS
ALA Notable 2013
Junior Library Guild 2012 Selection
A School Library Journal Best Book 2012
Recommended by the National Science Teachers Association

ADDITIONAL INFORMATION
Author's website www.carolyndecristofano.com

OTHER TITLES BY AUTHOR
Big Bang! The Tongue-Tickling Tale of a Speck that Became Spectacular (2005)
Leonardo's ABC: Sharing Leonardo DaVinci with Children (1997)

RELATED TITLES (Students may also enjoy these titles)
13 Planets: The Latest View of the Solar System by David A. Aguilar
Albert Einstein and Relativity for Kids: His Life and Ideas with 21 Activities and Thought Experiments by Jerome Pohlen
Black Holes by Ker Than
Black Holes: And Other Bizarre Space Objects (Science Frontiers) by David Jefferies
Eight Days Gone by Linda McReynolds
The Mighty Mars Rovers: The Incredible Adventures of Spirit and Opportunity by Elizabeth Rusch
Mysterious Universe: Supernovae, Dark Energy, and Black Holes by Ellen Jackson
Super Stars: The Biggest, Hottest, Brightest, and Most Explosive Stars in the Milky Way by David A. Aguilar

CLASSROOM CONNECTIONS

Art:

Abstract art is defined as art that does not attempt to represent external, recognizable reality but seeks to achieve its effect using shapes, forms, colors, and textures. Ask students to create abstract art of what they think the inside of a black hole looks like. They can use a variety of media (pastel, charcoal, torn paper, fabric scraps, clay, marker, chalk, etc) to achieve their vision on a canvas panel. Have them write a brief one paragraph description of the meaning of their piece.

Math:

In 2004 NASA released a series of educators' guides on "space math" one of the sections of this was "black hole math." This link is for a complete PDF packet of different, detailed math projects for grades 6-8 that can be used dealing with Black Hole Math: http://www.nasa.gov/pdf/377674main_Black_Hole_Math.pdf.

Social Studies:

Discuss Stephen Hawking's latest theory that black holes are actually gray: http://www.nbcnews.com/science/stephen-hawking-shakes-theory-again-black-holes-are-actually-gray-2D12001605. This can segue into a discussion about America's unending fascination with new scientific discoveries having to do with space. Why are his discoveries still so popular that they make national news? Why are people so fascinated with space exploration?

English:

DeCristofano's book is an example of interesting and engaging non-fiction. Assign students with the task to pick a favorite non-fiction subject (scientific, social studies, history, etc),

and have them write an informational essay that not only educates the reader about their subject matter but also entertains the reader with interesting facts.

Science:

- Visit the Discovery Education website for this lesson plan on Black Holes, http://www.discoveryeducation.com/teachers/free-lesson-plans/black-holes-the-ultimate-abyss.cfm. This thorough lesson plan includes a nice list of discussion questions.
- Discuss how the Hubble space telescope has helped scientists discover and study black holes. What identifying factors have led to these discoveries?
- Stand a vacuum hose upright and attach it to the side (at level) of a desk. Use a ball covered in flour, and orbit the ball near the hose using a tether. As you swing the ball in a circular motion around the hose, students can see how the flour is sucked into the vortex. You can use the motion and the orbit of the ball to show students that the ball will not necessarily be drawn directly into the hose depending on its orbital position and its speed.
- Visit sites such as NASA.gov, hubblesite.org, and spacetelescope.org for further resources.

DISCUSSION QUESTIONS

1. Before you read this book and learned about real black holes, what did you think black holes were? Where did you get this idea? (TV, space movies, etc.)
2. Is a black hole a hole? If not, then in your own words, what exactly is it?
3. What is the source of a black hole's ability to pull things in?
4. What do black holes come from? Explain the process.
5. Will our sun ever become a black hole? Why or why not?
6. How do scientists figure out where a black hole is?
7. Where is one nearby supermassive black hole? Where do supermassive black holes tend to hang out?

RELATED WEBSITES

NASA Space Education – Black Holes
http://spaceplace.nasa.gov/black-hole-rescue/en/
Discusses what black holes are and what different kinds there are.

NASA Goddard Space Flight Center – Black Holes
http://imagine.gsfc.nasa.gov/docs/science/know_l2/black_holes.html
Discusses what black holes are and the science behind how we know they are there.

Black Hole Educator Guide – NASA Education and Public Outreach Group
http://www.spokanefalls.edu/resources/Planetarium/_docs/Black%20Holes%20educator's%20guide.pdf
Although this guide was designed to accompany the viewing of a planetarium show, it has useful activities that can be used in conjunction with *A Black Hole is Not a Hole*.

Frequently Asked Questions about Black Holes – Virginia Tech Physics
http://www.phys.vt.edu/~jhs/faq/blackholes.html

Virginia Tech physics department answers frequently asked questions about black holes. These questions could be used to prompt discussion in class.

Greetings from Nowhere – Interview with Carolyn DeCristofano
http://greetings-from-nowhere.blogspot.com/2012/02/carolyn-decristofano-is-in-house.html
Blogger interviews author of *A Black Hole is Not a Black Hole*. Author gives her response on what inspires her to write science based children's books and shares information about her writing and research process.

Black Holes Gravity's Relentless Pull – Hubble Site
http://hubblesite.org/explore_astronomy/black_holes/
This site features a brief video introduction to the basic concept of a black hole. Site also features an interactive journey to a black hole and a black hole encyclopedia that answers questions, has a glossary, and features short experiments.