

Dr. Patrick Treuthardt, Physicist

North Carolina Museum of Natural Science

Podcast length: 16:33



LESSON PLAN

SYNOPSIS

[Dr. Patrick Treuthardt](#), the Assistant Director of Astronomy and Astrophysics Research Lab at the [North Carolina Museum of Natural Science](#) talks with Laura Fenn about how scientists study things in space like galaxies and planets using light.

VOCABULARY

Review key vocabulary (included definitions are limited to the context of today's podcast)

- **galaxy:** (noun) a system of millions or billions of stars, orbiting around a common center
- **black hole:** (noun) a region of space with a gravitational field that is so intense that nothing can escape it
- **escape velocity:** (noun) the speed at which an object must reach in order to escape the gravitational pull of a planet or other object

QUESTIONS FOR THOUGHT & DISCUSSION

1. Dr. Treuthardt explained that there is so much we don't actually know about space and about what's out there. What are some questions you have about outer space?
2. Dr. Treuthardt described the study of astronomy as being passive because there is almost no hands-on experiences and nothing you can touch. We aren't able to actually go out into space and experience what we are studying. How is this similar to and different than other fields of science you have learned about, such as biology and geology?
3. Dr. Treuthardt mentioned that scientists are trying to determine the conditions necessary for life elsewhere. Do you think it is important that we try and determine if there might be life somewhere else in the universe? Why or why not?

BOOK SUGGESTIONS

Consider reading aloud or making some of these titles available to students to reinforce and extend some of the concepts covered in today's podcast.

[Beyond the Solar System](#) by Mary Kay Carson

This book follows the progression of our knowledge and understanding of the universe and contains hands-on-projects that help students further explore and discuss the book's content.

[I, Galileo](#) by Bonnie Christensen

Students are introduced to Galileo in this well-written biography.

[The Mighty Mars Rovers](#) by Elizabeth Rusch

Learn about two rovers, Spirit and Opportunity, that were sent to Mars with a mission to determine if Mars ever had water that could have supported life

EXTENSION ACTIVITIES

The following activities are ways to build on and extend some of the topics discussed in the podcast. We strongly encourage you to always preview videos prior to showing them to your students.

[Sizing Up the Universe](#) <http://bit.ly/1JSVLPT>

Game from BrainPOP and the Smithsonian

Help students better understand how scientists are able to determine and compare the relative size of objects that are so far away. There is a [recording sheet and lesson plan](#) to accompany this activity.

Note: There are other great games available on BrainPOP that help build students' understanding of space: Drake Equation and Build a Solar System.

[How Do We Study the Stars?](#) <http://bit.ly/1Hgu11x>

TED-Ed Video (4:45)

Gain a better understanding of how we are able to learn about our own galaxy and those far beyond.

[How Do Scientist Explore the Solar System?](#) <http://bit.ly/1INAhCC>

Wonderopolis.org

Wonderopolis has many passages, videos and activities for all kinds of topics involving the solar system. Choose a few to explore as a whole group, or allow students to pick what they are most interested in.