INTRODUCTION

In this lesson, students will be introduced to the phenomenon of light intensity, the inverse-square relationship it has to distance, and how lighthouses leverage the physics of light to help guide ships safely to shore.

They will learn what light intensity, luminosity, and brightness are, understand how the inverse-square law governs the intensity of light at various distances, and construct a model to explain how lighthouses function. The context for this lesson will be the Spectacle Reef Lighthouse.

This lesson includes multiple activities that can span the course of several sessions or be adapted to fit the needs of your group's meeting format.

Some prior knowledge* with which students should be familiar includes:

- Forces and motion
- Measurement and exponents
- Mass, volume, and density

NGSS CONNECTIONS

Phenomenon: Light Intensity

- MS-PS4-2.
- SEP-6
- SEP-7
- SEP-1
- MS-PS4-2
- MS-PS4-3
- MS-PS4-4

During the course of the lesson, students will progress through the following sequence** of activities:

- Class discussion to elicit or activate prior knowledge
- Teacher notes on how light travels
- Close reading a **video**
- Watch a *Great Lakes Now* segment on Spectacle Reef Lighthouse
- Class discussion to debrief video
- Conduct an experiment to measure relative light intensity
- Read about living in a lighthouse
- Create a lighthouse model

The lesson progresses through three major sections: **launch, activities, and closure.** After the launch of the lesson sequence, you are ready to begin the lesson activities. Once finished with the activities, students will synthesize their learning in the closure section.

Follow this QR Code or hyperlink to the Episode Landing Page!

Check out our online collection of lessons for more activities related to these topics.

***The sequence of these activities is flexible, and can be rearranged to fit your teaching needs.**

If you use this lesson or any of its activities with your learners, we'd love to hear about it!

Contact us with any feedback or questions at: **GreatLakesNow@DPTV.org**