

NGS
MAGNIF/ED

NOVEL STUDY



PROJECT

HA1L MARY

ANDY WEIR

Novel Studies in the Science Classroom: Developing Science Literacy Skills

Today struggling readers face many long-term challenges and are more at risk of falling behind. However, science is a great way to engage students, no matter their background. NGS Magnified has created novel studies for teachers to use in the science classroom to help bridge that gap. Novel studies help build rapport with students while supporting and fostering independent learning. In addition, we believe that using novel studies in the science classroom will expose students to different perspectives and help them understand how science vocabulary applies to so many events in their lives.

Research shows that connecting content and skills from other subjects enhances students' learning and improves their comprehension.

- *The literacy from reading can easily come from non-fiction and fiction novels that surround a science-related topic and are far more of a high-interest read for the majority of students than reading a textbook (Anderson & Hite, 2010; Batchelor, 2017; Coiro, 2012; Freudenrich, 2000).*
- *Science fiction novels are an excellent way to engage students in science ideas while also helping students improve their literacy skills. (Creech and Hale, 2006)*
- *Teachers can add in other readings from the internet and news articles which brings the reading level down to a more manageable level, however students are more willing to learn and spend the time to learn new vocabulary when highly engaged in what they are reading (Weinbugh et al., 2014).*

NGS Magnified novel studies heavily focus on the following:

- vocabulary
- reading comprehension
- simple research
- cross-curricular connections
- culminating final project

Students will focus on inquiry skills such as comparing and contrasting, summarizing, making inferences, cause/effect relationships, fact and opinion, and critical thinking.

Happy reading,
Erica



Ryland Grace is the sole survivor on a desperate, last-chance mission—and if he fails, humanity and the earth itself will perish.

Except that right now, he doesn't know that. He can't even remember his own name, let alone the nature of his assignment or how to complete it.

All he knows is that he's been asleep for a very, very long time. And he's just been awakened to find himself millions of miles from home, with nothing but two corpses for company.

His crewmates dead, his memories fuzzily returning, Ryland realizes that an impossible task now confronts him. Hurtling through space on this tiny ship, it's up to him to puzzle out an impossible scientific mystery—and conquer an extinction-level threat to our species.

And with the clock ticking down and the nearest human being light-years away, he's got to do it all alone.

Or does he?

An irresistible interstellar adventure as only Andy Weir could deliver, *Project Hail Mary* is a tale of discovery, speculation, and survival to rival *The Martian*—while taking us to places it never dreamed of going.

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**Check out the following sample pages
focusing on science vocabulary, reading
comprehension, and literacy-based projects!**

Teacher Guide included!

Find out what students already know.

Before You Read

Directions: Read the article below and then answer the questions on the following page.

Venus and Earth: Sisters in the Solar System

Have you ever heard of Venus called Earth's twin? Astronomers and space enthusiasts are fascinated by the striking similarities to Earth. Venus and Earth are both planets meaning they are comprised of rock and metal and have similar materials, with iron, oxygen, silicon, and carbon as abundant elements. Venus and Earth also have a similar diameter of approximately 7,500 miles, while Earth has a diameter of approximately 7,900 miles. Both planets also have water, although Venus' water is in the form of ice. Additionally, Venus displays clear signs of a greenhouse effect, resembling the geological processes of Earth.

Before You Read

Directions: Answer each question in complete sentences.

1. Why is Venus referred to as Earth's twin?

2. What makes Venus a terrestrial planet?

_____ take on Venus?

_____ ?

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WORD STUDY: Chapter 1

1. Experiment

What is the first stage of the scientific method?

- a. Draw conclusions
- b. Collect data
- c. Ask a question
- d. Present findings

3. LED

What does LED stand for?

2. Retinas

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WORD STUDY: Chapter 1

7. Atrophy

Use the word *atrophy* correctly in your own sentence.

8. Submarine

Use the word *submarine* correctly in your own sentence.

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WORD STUDY: Chapter 1

13. Desiccated

Use the word *desiccated* correctly in your own sentence.

14. Imperial units

List five imperial units.

1.

2.

3.

4.

5.

15. Digestive system

List five organs of the digestive system

1.

2.

3.

4.

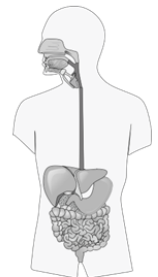
5.

16. Ambulation

Definition:

17. Microscope

Why were microscopes such a revolutionary invention?



Vocabulary

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Reading Check Chapters 4-6

Directions: Answer the following questions in complete sentences.

1. Why would the ship want to ditch its fuel tanks?

2. What does Ryland do?

3. What will happen if?

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Reading Check Chapters 4-6

6. Explain how to breed Astrophage at a large scale.

PROJECT HAIL MARY

Final Project - Design a Habitable Planet

- 4.

Welcome to the exciting world of Project Hail Mary! In this engaging science project, you will embark on a journey to design a habitable planet for human life. By applying your knowledge of biology, physics, and engineering, you will create a planet capable of sustaining life.

- 5.

Project Requirements:

Designing a habitable planet is a complex task. To create your habitable planet, you will need to consider the following requirements:

- Planet Design
- Life Support
- Ecosystem
- Energy Sources
- Human Adaptation

Read more about these five requirements to understand the requirements for a habitable planet.

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Planet Design: Develop a detailed plan for your habitable planet, including its size, atmosphere composition, distance from the star, rotation period, and other relevant characteristics. Think about how these factors will sustain life.

Life Support Systems: Design systems that would sustain human life on the planet. Consider water purification, waste management, and the efficiency of these systems.

Ecosystem: Create a diverse ecosystem that includes various organisms and microorganisms. Emphasize the balance and interdependence within the ecosystem.

Energy Sources: Identify and explore renewable energy sources that can power the planet. Consider the availability and efficiency of these sources.

Human Adaptation: Consider the challenges humans would face on the planet, such as temperature extremes. Propose strategies for survival and make the planet habitable.

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Presentation Options:

Plan for your presentation to be around 5-7 minutes. This timeframe allows enough time for you to explain your planet while leaving room for questions and discussion.

Poster Presentation:

Create visually appealing posters to present the planet designs. The posters should include detailed information about the planet's characteristics, life support systems, ecosystem, energy sources, and human adaptation strategies. Use illustrations, diagrams, and charts to convey ideas effectively. Present posters to the class, providing explanations and answering questions about the designs.

Multimedia Presentation:

Create a multimedia presentation using presentation software like PowerPoint or Google Slides. Include slides with text, images, and videos to present the project designs. Be creative in the presentation style, incorporating animations, sound effects, or voiceovers. Present multimedia presentations to the class, sharing design concepts and explaining choices.

3D Model Display:

Create a 3D model/diorama using various materials such as clay, cardboard, or modeling kits to construct the planet and showcase the different elements of their designs. Label and explain the key features of the models, such as the planet's atmosphere, ecosystems, and human settlements. Set up 3D models on display tables and give short presentations while allowing classmates to explore the models.

Each section has reading comprehension questions to track student progress and understanding.

Novel Project option



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