

# *Paired Text Teacher's Guide for*

## *S.T.E.A.M Awareness*

Fifth-Grade

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LIBS 642: Children's Literature Across the Curriculum, PK-8

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June 20, 2021

## Hook/Warm-up

To activate students' prior knowledge about STEM, students will watch the YouTube video [STEM in early learning: Engineering with the \*Three little pigs\*.](#)

The video is 6 minutes long but you will love the excitement the students have in doing their activity, and it is also helpful for adults to see how a book, like the three little pigs, can be used in STEM.

Have a whole group discussion with the students about working in a group. Then, have a group discussion with the following questions:

1. What did they notice about how the students worked together?
2. How is STEM used in the building of the pigs' houses?
3. Have them share how STEM is used in our daily activities.

## Full S.T.E.A.M Ahead Bulletin Board Ideas

## To create interest in STEM.



Pinterest. (2021). *Five for Friday! November 6!| Science classroom decorations*. <https://images.app.goo.gl/udtrKbxUbSBBtVPo9>

Pinterest. (2021).STEM bulletin board- A primary owl.  
<https://images.app.goo.gl/NnEBgYNXkjKNG3Jm6>

To showcase students' work.

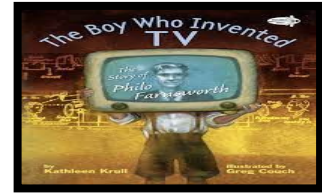


Pinterest. (2021). *Circuit STEAM bulletin board| Stem classroom decoration*.  
<https://images.app.goo.gl/nSbPdnotaFA3zAma8>)

When the topic is introduced, create an interest in STEM, by combining the 2 boards with the question “Where will STEM take you?” on top of the “STEM” board. Then, put photographs of different STEM careers in each quadrant.

## Synopsis of *The boy who invented TV* by Kathleen Krull.

Illustrated by Greg Couch



The boy who invented television was 14 years old when he challenged himself to figure out how to transmit the world's first television image. Philo Farnsworth was a child genius who had a love for electricity and machines, which earned him the family name "Farnsworth Electrical Engineer." In 1920, as he plowed a potato field, he discovered a way to "make pictures fly through the air."

### Book review quotes:

- "One to inspire young audiences with the vast possibilities that imagination and diligence can accomplish."  
-School Library Journal, starred review
- "Beautiful and beautifully told, the book tracks like the sort of graphic novel that breaks your heart, with its implied passage of time and slipping away of early dream." -The New York Times, book review

(Krull, K. & Couch, G. (2014). *The boy who invented TV*. Dragonfly Books)

## Synopsis on Any day with you by Mae Respicio



Award winning author Mae Respicio uses family culture, history and science to write this fictional tale of family. Kaia, a teenage Filipino girl, aspires to create a movie to win a contest. She wants to impress her grandfather, Tatang, so he does not move back to the Philippines, leaving the family in California. Kaia is able to persuade her friends to create this movie with her using the Filipino folktale that her grandfather has shared with her during their quality time together.

### Book review quotes:

- “A tale of family relationships and transitions told with plenty of heart.” -Kirkus review, 2020
- “A must-purchase.” - School Library Journal, Starred review

(Respicio, M. (2020). *Any day with you*. Wendy Lamb Books.)

## Discussion Questions: *The boy who invented TV*

1. How did Philo's life change after his invention? Support your answer with details from the story.
2. What chores gave Philo the name "Farnsworth electrical engineer"?
3. Do you agree with the author that radio and TV was a means to bring people together?
4. Essential question from the text. How does technology lead to creative ideas?
5. Give details to show how Philo's life changed after the family moved back to Idaho?

## Discussion Questions: *Any day with you*

1. Why was Tatang able to teach Kaia about science and philosophy?
2. How did the choices Kaia make influence her friends?
3. What does the author mean by do “things to remember the moment”?
4. How does the author define “winning”?
5. In what ways do you relate to Kaia and her attempt to look smarter like her big sister?

## Comparative Questions

1. How are the lifestyles of the characters in both books similar?
2. Both authors used the outdoors to bring Karai and Philo closer to their loved ones? How did that inspire them to become an inventor and an artist ?
3. Do you believe the needs of both families inspired the characters to be creative?
4. What influenced Kaia to create her movie and Philo the television?
5. What were the challenges that Kaia and Philo faced and overcome to fulfill their dreams?



## Science SOL

**5.1** The student will demonstrate an understanding of scientific reasoning, logic, and the nature of science by planning and conducting investigations in which

**G)** Data are collected, recorded, analyzed, and communicated using proper graphical representations and metric measurements.

The purpose of this SOL standard is to teach students how to investigate, reason and ask questions. Refer back to the warm-up video on “Three little pigs” to emphasize how the students reasoned, then constructed a model of a house. Encourage the students to work collaboratively on these projects as the students did in the video.

**Siemens STEM Day Activities** There are 3 activities selected from this resource which offer many other choices.

**Idea #1 “Anchor’s Away! Objective:** “Students will examine two different techniques for mapping different aspects of the ocean, and will model those techniques on a small scale in the classroom.

**Idea #2 “Bounce!” Objective:** Students will gain an understanding of how the height from which a ball is dropped affects how high it bounces. Students will also learn about averaging, graphing, and lines of best-fit in this exploration.

**Idea #3 “Critical Critters” Objective:** Students will be able to develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

(Siemens STEM Day. (2021). *Science technology engineering math*. <https://www.siemensstemday.com/educators/activities>)

## Language Arts SOL

**5.1** The student will use effective oral communication skills in a variety of settings.

**A)** Summarize information gathered in group activities.

**Idea #1:** The students will engage in collaborative discussions about the texts by comparing and contrasting the details from the additional reading lists. The discussion questions should be used as a guide to summarize, draw conclusions, support their opinions and make inferences. **For example:** What inspired the development of the various inventions in the text? Students should keep a journal to write their responses to the questions.

**Idea #2:** Students should use their journals to write a descriptive essay on the various inventors and their inventions. The essay should include how the inventions make a difference in society.

**Idea #3:** Students should be taught that scientists keep notes on their research. Their journals should be used to summarize the information they find during their research on all activities.

## Technology SOL

**5.9** The student will find, evaluate, and select appropriate resources to create a research product.

**A)** Collect and organize information from multiple resources (Bibliography).

**Idea #1: Inventors & Inventions Objective:** The book, *The boy who invented TV*, and the additional reading introduces inventions and technology that has impacted society's needs. Students will choose a STEM field to find inventors and inventions that influenced the specific field. Students should use various educational and credible sources to do their research. Their information can be presented in a powerpoint presentation, WeVideo or other media tools to share their finished product.

**Idea #2: Animals and Habitats Objective:** Students will research animal habitats to learn how they interact with other animals. Students must show a complete food chain, starting with plants up to the predators. Students will present their findings on a posterboard, a powerpoint or video presentation.

**Idea #3: Planets Objective:** Students will choose a planet, or teacher can assign one to research. They will gather and organize information such as, how long a year and a day are on a planet. Students will create a poster or brochure pretending to sell a house on their planet.

Ideas #2 & #3: (Student Treasures Publishing. (2021, February 26). *17 Fun research projects for elementary students*.

<https://studenttreasures.com/blog/17-fun-research-projects-for-elementary-students/>)

# Library Connections

## AASL Standards

**Engage VI.A.1:** Responsibly applying information, technology, and media to learning.

**Engage VI.A.2:** Understanding the ethical use of information, technology, and media.

**Idea #1:** Collaborate with the classroom teachers to set time to review with the students computer safety rules and expectations.

**Idea #2:** Review or introduce copyright laws and how to cite their sources.

**Idea #3:** Discuss plagiarism and the consequences of using works without giving credit to the original authors.

(AASL American Association of School Librarians. (2018). How are the standards used?

<https://standards.aasl.org/wp-content/uploads/2017/11/AASL-Standards-Framework-for-Learners-pamphlet.pdf>)

# Book Websites

## *Any Day with You*

1. [Penguin Random House Canada](#)
2. [Mae Respicio](#)
3. [Mae Respicio Bio](#)
4. [Kirkus Review](#)
5. [Random House | Teachers & Librarians](#)
6. [Watch. Connect. Read Blog](#)

## *The Boy who Invented TV*

1. [Kathleen Krull](#)
2. [Penguin Random House](#)
3. [James Patterson Review](#)
4. [Philo T. Farnsworth Inventor](#)
5. [Kirkus Review](#)
6. [Smithsonian Magazine](#)

## Authors' Information

Kathleen Krull was an award winning author of Children's books and a former book editor. She was the recipient of the Golden Kite Award for nonfiction, Parents' Choice Award, and Jane Addams Children's book Award for Picture Book.

Ms. Krull passed away on January 15, 2021.

### Other Books:

- *Leonardo da Vinci*
- *No Truth without Ruth*
- *Giants Science: Marie Curie*
- *Wilma Unlimited*
- *Starstruck: The Cosmic Journey of Neil deGrasse Tyson*



Asian-American author Mae Respicio proudly represents her Filipino heritage in her books. The books she writes primarily for middle school students, are said to have heart and hope. She won the 2019 APALA Honor Award in Children's Literature and NPR Best Book of the Year for her book *The house that Lou built*.

### Other Books:

- *Just under the clouds*
- *How to win a slime war ( 9/21)*
- *The House that Lou built*
- *Tune it out*



## Additional Reading (National Science Teaching Association & Titlewave.com)

### Further Reading/Leveled Readers

1. *Counting on Katherine: How Katherine Johnson saved Apollo 13* by Helaine Becker. Illus. by Dow Phumiruk
2. *The mis-calculations of lightning girl* by Stacy McAnulty
3. *The girl with a mind for math: The story of Raye Montague* by Julia Finley Mosca. Illus. by Daniel Rieley
4. *Mae among the stars* by Roda Ahmed & Illus. by Stasia Burrington
5. *Bats in trouble* by Pamela McDowell & Illus. by Kasia Charko
6. *Unseen worlds* by Helene Rajcak and Damien Laverdunt

### STEM Readers

1. *How the weather works: A hands-on guide to our changing Climate.* By Christiane Dorion. Illus. by Beverley Young
2. *Coral reefs* by Jason Chin
3. *Hatch!* by Roxie Munro & Marshall Cavendish.
4. *Desert elephants* by Helen Cowcher
5. *At the sea floor café: odd ocean critter poems* by Leslie Bulion. & Illus. by Leslie Evans
6. *Leonardo's science workshop: invent, create, and make STEAM projects like a genius (Leonardo's Workshop)* by Olinger, Heidi

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Kirkus Review. (2021). *The boy who invented TV*.

<http://www.kathleenkrull.com/portfolio-items/the-boy-who-invented-tv-the-story-of-philo-farnsworth/>

Krull, K. (2018). *The boy who invented TV*. <http://www.kathleenkrull.com/portfolio-items/the-boy-who-invented-tv-the-story-of-philo-farnsworth/>

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National Science Teaching Association. (2021). Best STEM Books K-12.

<https://www.nsta.org/outstanding-science-trade-books-students-k-12>

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<https://kids.jamespatterson.com/read-kiddo-read/the-boy-who-invented-tv-the-story-of-philo-farnsworth/>



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<https://www.penguinrandomhouse.ca/books/592343/any-day-with-you-by-mae-respicio/9780525707608>

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<https://www.penguinrandomhouse.com/books/96003/the-boy-who-invented-tv-by-kathleen-krull-illustrated-by-greg-couch/>

Random House |Teachers & Librarians. (2021). *Fresh Voices: Mae Respicio*.

<https://www.rhteacherslibrarians.com/latest-buzz/fresh-voices-mae-respicio/>

Smithsonian Magazine. (2021). *The Farmboy who invented television*.

<https://www.smithsonianmag.com/smart-news/farmboy-who-invented-television-while-plowing-180964607/>.

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