Recognizing and Celebrating the Life and Times of Raye Montague: A Teaching Tip

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Abstract

The authors share a picture book biography based on the life and times of Raye Montague, a mathematician and engineer who should be more famous but isn't. They also share an instructional strategy that teachers can use with this and other picture book biographies and literary genres to support interdisciplinary teaching and learning in the classroom.

Keywords: Picture Book, Instructional Strategy, Biography

1 Introduction

Historically, many women were famous mathematicians. Among others, these included Hypatia, Emmy Noether, Ada Lovelace, and Sophie Germain. More recently, Katherine Johnson, Mary Cartwright, Maryam Mirzakhani, and Fan Chung are often identified as famous mathematicians. All these women most certainly deserve the characterization as famous. Missing from these lists is the name Raye Montague. She, too, is a mathematician who deserves to be famous but isn't. Fortunately, an informative picture book biography recognizes and celebrates the life and times of this little known, but remarkable, mathematician.

2 Picture Book Biography

In rhyming text, *The Girl with a Mind for Math* (Mosca, 2018) tells the remarkable story of little-known Raye Montague, an African American woman born and raised in Arkansas. Raye was a curious child. One day, she saw a submarine. Her grandfather said it was designed by engineers. From that day on her dream was to be an engineer.

A woman engineer? Raye an engineer? People laughed. At the time Arkansas was a segregated state, and engineering was not taught to African American students. Fortunately, Raye was gifted in math. She moved to Washington D.C. and was employed to type at a Naval facility where engineers designed submarines. Raye learned much by watching the engineers do their work.

One day, all engineers got the flu. Raye did her own work and the work of the engineers at the same time. She developed a computer program and used it to design a large ship. All the engineers recognized her quick mind for math. The Navy recognized Raye as the first woman to lead ship design. Over the years, Raye received many awards. The award she valued the most read, "Raye Montague, Engineer."

This informative and inspiring picture book biography also includes an illustrated chronology of major events in the life of Raye Montague, a detailed biography, and a bibliography of articles and books for further reading.

3 Instructional Strategy

3.1 Background

ACTSIPP (Angle, Circle, Triangle, Square, Infinity, Plus, Percent) is a variation of Triangle-Square-Circle (Teacher Tool Kit, n.d.). We have found it to be an effective strategy not only to use with this picture book biography about Raye Montague, but also any piece of literature that deals with mathematics, fiction and nonfiction. We value this strategy for several reasons. One, we value integrated curriculum, in this instance literacy and math. Two, we like to show students how popular math symbols can be used as part of prompts to respond to literature. Three, we value word play. For example, we use the mathematical symbol of *angle* for perspective, e.g., take a different *angle* or perspective on this story. Four, our students find this strategy different, but fun!

3.2 Procedure

First, we organize students into small groups (3–4). Next, we distribute an *ACTSIPP* sheet to each student. Then, we display the directions for the *ACTSIPP* strategy on the white board or a PowerPoint slide and discuss it as a class. Here are our directions:

1. We will read aloud this book and pause for 3–4 minutes at different places in the story.
2. When we pause, use prompts to record your thinking at that point in the story. You can answer one or more prompts at each pause.
3. After our reading, spend time and complete all the response prompts.
4. In your groups, take turns sharing and discussing your *ACTSIPP* sheets.
5. Afterwards, flip your *ACTSIPP* sheet over and spend some time writing and sharing your personal reflections on the whole experience.

4 Moving Forward

We hope this short article will do for readers what this new picture book about Raye Montague did for us. It motivated us, taught us new information, and inspired us to read more picture books about her and people like her. To that end, we recommend *Up Periscope!: How Engineer Raye Montague Revolutionized Shipbuilding* (Swanson, 2024). Happy reading!

References

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Appendix: ACTSIPP Response Sheet

ACTSIPP

(Angle, Circle, Triangle, Square, Infinity, Plus, Percent)

∠ I think another **angle** to this story

_____

_____

\+ I think one important **plus** from this story

_____

_____

∞ Something that I will remember for **infinity** from this story

_____

_____

○ Something that is still going around like a **circle** in my head

_____

_____

△ Something pointed like a **triangle** that stood out in my mind

_____

_____

□ Something that **squared** or agreed with my thinking

_____

_____

% A **percent** or part of this story I really liked

_____

_____