Using Mathematics Literature with Prospective Secondary Mathematics Teachers

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Using Mathematics Literature with Prospective Secondary Mathematics Teachers

Presenter: Dr. Christopher Jett
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Friday, March 6, 2015
Introduction

- Have the breadth and depth of mathematics knowledge to effectively teach students (MAA, 2001)
- Incorporate literature in mathematics (NCTM, 2000)
- Build on the work in this domain with prospective elementary teachers
How might the incorporation of literature through literature circles influence prospective secondary mathematics teachers’ pedagogical paradigms?
Build on existing literature.

Advance the field of mathematics education research.

**Literature**

- Hillman (2000): devise lessons with strong, weak, or no link
- Warde (2005): connect math to other disciplines

**My Work**

- Analyzed preservice teachers’ work through these categories
- Used some novels to introduce the idea of teaching math through literature
- Equipped them with resources & strategies to connect math to other disciplines
Intervention

- Engage students in the mathematics teaching and learning dynamic
- Place students in literature circle teams
- Infuse concepts from literature in problem sets, math tasks, and other activities
- Pose problems for mathematical exploration
- Improve their accuracy and precision of mathematical vocabulary
Literature in Mathematics!!!

- Connects math to other disciplines
- Develops students’ math vocabulary
- Expands students’ vocabulary
- Assists with reading comprehension
- Increases students’ reading rates

- Cuts across the multiple intelligences
- Spans learning styles
- Appeals to ELLs
- Relates to students’ lives and experiences
- Promotes cultural inclusiveness
- Makes mathematics learning fun
## The Study

<table>
<thead>
<tr>
<th>Race</th>
<th>Gender</th>
<th>Number of Prospective Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>Female</td>
<td>2</td>
</tr>
<tr>
<td>Chinese</td>
<td>Female</td>
<td>1</td>
</tr>
<tr>
<td>White</td>
<td>Female</td>
<td>5</td>
</tr>
<tr>
<td>White</td>
<td>Male</td>
<td>3</td>
</tr>
</tbody>
</table>
“Before this class I had never considered bringing in literature outside of a textbook. Even if I had tried to bring in other pieces of literature, I would not have known where to look for relevant materials.” (Steve)
“Before the projects we presented in class I wasn’t exactly sure how to bring literature into the classroom besides using textbook applications... There are books that tell a fun history of math, fictional books that tell stories through the use of numbers, and even subject guidebooks with fun stories and riddles to help students retain what they read. We need these materials in the classroom because not everyone loves math, and it’s easy to forget that when you’re a future mathematics educator taking mostly math classes with math lovers.” (Samantha)
“In general I still feel unprepared to incorporate literature into my classroom. Out of the options of books for the literature presentations, I am glad that I got *The Man who Counted*. I would use this book to build a basis for problem of the week in my classroom...The incorporation of these books did not help me get a better understanding of math ideas nor did it help me learn how to incorporate literature into the classroom.”

(Mary)
Theme 2: Little to No Benefits

“While the midterm literature presentations were interesting in that they introduced me to several books I may never have heard of otherwise, the presentations did not help me to see how I could incorporate the books in my future classroom in a meaningful way.”
(Beth)
Critical Questions

- How might literature inform the reform goals for mathematics education/STEM education?
- How might we use literature to effectively address the Common Core State Standards?
- What types of curricula, pedagogical approaches, and theoretical orientations are effective in helping prospective secondary school teachers gain STEM content, conceptual and pedagogical knowledge?
Thank you for attending!!!
Please share any thoughts, questions, or suggestions.

Incorporate literature so that students can read, write, and reason with mathematics!!!