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Understanding Current Math Teacher Perceptions of Literacy and its Role in their Classrooms

by
Amanda Reinsburrow
PhD Student
Drexel University

Supervising Professor: Dr. Valerie Klein

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Amanda Reinsburrow
Drexel University

Abstract

Literacy has a variety of definitions across disciplines. From reading to mathematics to technology, literacy is attached to all of these. This research is focused on understanding math teachers' definitions and use of literacy in their classrooms. Data collected will be used to begin to map teacher perspectives of literacy with definitions of literacy from the literature.

Problem

While research exists in mathematics education around students' struggles with word problems, specifically for students with deficient reading and comprehension skills (Akbasli, 2016), there is less understanding of how to meaningfully incorporate reading strategies into math classrooms to address those deficiencies. In fact, it may not be worthwhile to incorporate general reading strategies in the math classroom, strategies needed for students to succeed at reading in math classrooms may be an advancement of the basic reading strategies they learn (Doerr & Temple, 2016; Shanahan, 2015). Further complicating this area of research is the multiple definitions and uses of the word literacy, the impact specific content area literacies (i.e., reading and math) may have on success for students in a particular domain; as well as the need for multiple types of literacies in content-rich domains (Shanahan, 2015). Thus, adding in content area literacy strategies may be beneficial. Shanahan and Shanahan (2008) recommend teaching content area literacy in order to support not only mathematics, but history and science as well.

Aim

The purpose of this research study is to explore mathematics teachers' perceptions of math literacy and reading literacy. The goal is to gain understanding of how educators conceptualize math and reading literacies individually and as connected, and how those perspectives may inform their instruction or opportunities for professional development.

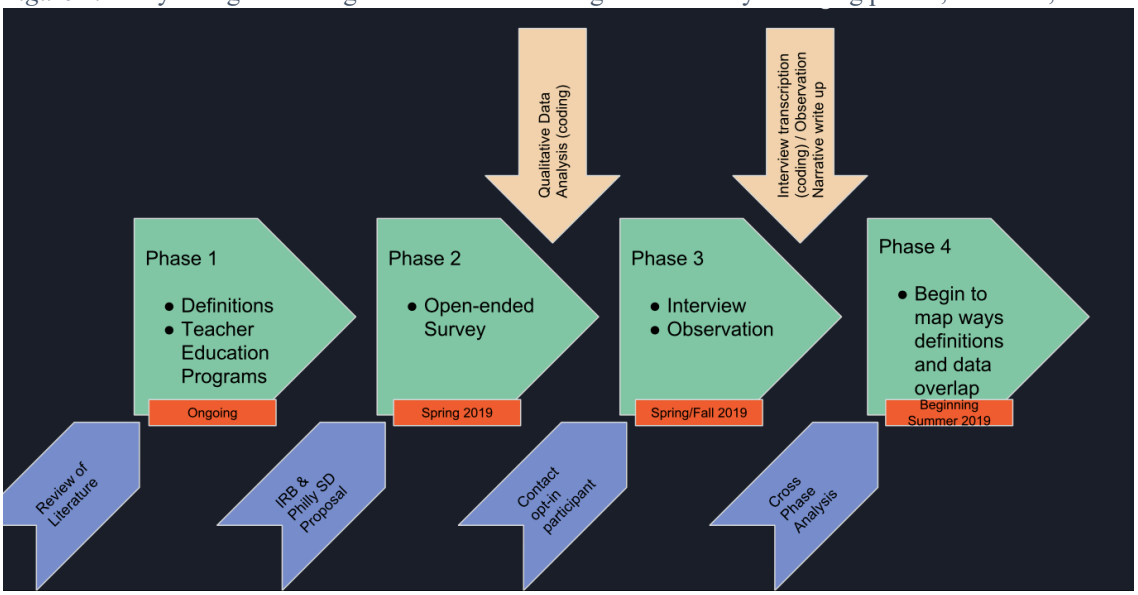
Research Questions

1. How do mathematics teachers define literacy?
    a. In what ways can their definition be described as coming from a reading perspective?
    b. In what ways can their definition be described as coming from a mathematics perspective?
2. What are mathematics teachers' thoughts on the importance of reading literacy in the mathematics classroom?
3. In what ways, if any, do mathematics teachers' see literacy as part of their responsibility?
4. Do mathematics teachers' stated definitions and descriptions of use match with what is seen in their classrooms?

Study Design

This qualitative study will have four phases (see Figure 1). The first phase is to analyze how these content-area literacies are defined across the literature and how typical teacher education programs for middle and secondary teachers incorporate strategies for developing content area literacy that makes connections from reading to mathematics. The second phase is to collect and analyze qualitative survey data on how mathematics teachers define literacy and its role in their classrooms. During phase two, participants will have the opportunity to opt-in to a third phase. Based on analysis of the survey data, the third phase will include interviews with teachers who opt-in to this portion of the study to follow up on emergent themes from the analysis. It will also include observations in their classrooms to get a sense of the potential for and the role of literacy strategies in their classroom. The fourth phase, which is an analysis phase, will look at the way the interviews and observations further inform the survey data results. Ideally, this overall analysis will allow for a map of the ways that reading and mathematics literacies overlap and how teachers could be served by understanding connections between the two and reveal potential ways to support teachers to develop these skills.

Figure 1. Study Design. This figure illustrates the design of this study including phases, time line, and data analysis.



Implications

This continuing project aims to begin the design of a map of literacy definitions as they are related to mathematics while showing supports for reading in the mathematics class. Ultimately this research will be used to inform mathematics teachers of the relationship between reading and mathematics literacy and may be used to design supplemental curriculum that can be used to enhance mathematics coursework.

References

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Author Biography

Amanda Reinsburrow received a Bachelor of Mathematics from Carlow University in Pittsburgh. During and after which she did some computer programming for US Steel's EDI department before starting here career in Education. She taught 8th grade at a small, rural school in California for a year before moving to Florida where she spent the next 12 years. While in Florida, Amanda taught middle school and high school, ran an after-school program, and tutored numerous students individually. It was during her time teaching high school that she pursued a master's degree in Mathematics Learning and Teaching at Drexel University. Amanda is now in her 2nd year of the PhD program and is excited to continue her work on Mathematics and Literacy connections.