Understanding and Describing Mathematics and Engineering Graduate Fellows Participation in a STEM* Literacy Seminar: A Case Study
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What is STEM literacy?
The ability to read, write, talk, listen, plan, problem solve and apply, with comprehensive understanding, knowledge and skills which bridge and integrate 4 academic disciplines—science, technology, engineering, and mathematics life-related science, technology, engineering and mathematics (Doty, Maring & Davis, 2007).

NATIONAL NEED
Reading:
-27% of America’s 12th-grade students read “below basic” level—retrieving information from a detailed document
Mathematics
-39% of U.S. 12th-graders perform below basic level, e.g. ability to use Pythagorean formula to determine the hypotenuse (NCES, 2005)
WSU College Freshmen
369 Freshmen during Fall ’07 were required to take remedial mathematics prior to their one required course

RESEARCH QUESTIONS
Will graduate fellows in mathematics and engineering in the STEM literacy class demonstrate an understanding and application of:
a) math-talk (talking-to-learn mathematics)?
b) STEM- literacy?
c) collaborative-constructivist learning?

METHODS
Participant-researcher (author) case study of a STEM Literacy Seminar with 4 graduate fellows working in 3 secondary mathematics classrooms in Eastern Washington
Data sources-classroom conversations videotaped and triangulated with field notes, fellow’s writings, and interviews of fellows
Data analysis using constant-comparative method

RESULTS
• ESL-ELL factors in both fellows and students made learning and communicating more difficult
• Fellows’ backgrounds may have hindered their receptivity to balancing conceptual understanding with procedural skills in their classrooms
• Fellows exhibited an increased awareness and use of math-talk, and collaborative learning pedagogy
• Fellows progressed in recognizing and applying content literacy strategies for students’ learning

*STEM: Science, Technology, Engineering and Mathematics Literacy
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