It is becoming more accepted that students need to be able to solve open-ended, real-open problems. As stated by many funding agencies, our future workforce needs to be able to solve problems that are not yet even imaginable. However, students are not often exposed to mathematical modeling at an early age and may not consider open-ended problems even at the undergraduate level. To this end, we describe a professional development workshop for local teachers to promote problem solving with mathematical modeling in a context relevant to middle school students. We discuss not only content, but challenges in implementing practices in the classroom. Ultimately, we hope to show that these activities enhance not hinder meeting state and national standards in mathematics while engaging students in integrated STEM curriculum. (Received September 20, 2010)