Modeling Functions: Modified Falling Ladder Task

By the time students graduate from high school, the knowledge of functions has shifted from a conceptual understanding to a procedural approach, where the understanding of functions is based upon memorized computational steps that can't be modeled. A focus on the computational aspect of mathematics can have a long-term effect on students' ability to understand the meaning of functional relationships, negatively affecting their overall ability to reason mathematically. Without educators making a conscious decision to recognize the value of modeling and force its' inclusion, there are few opportunities to experience the application of functional relationships in secondary mathematics classrooms. This presentation overviews a task that provides students with an opportunity to engage in the analysis of the relationship between two quantities through a modeling exploration of a variation of the infamous falling ladder problem. Students use technology to aid in their discovery as they progress through various level of the task, ranging from Geometry to Calculus topics. The overall goal is to portray a real-life situation where the problem may contain ambiguous information, too much/too little data, and involve visual representations as students model the falling ladder problem. The task included in this research provides educators with a resource that can be duplicated or expanded to provide students will a realistic modeling opportunity throughout various secondary mathematics classes.