Mathematical modeling is a conceptual tool that combines real-world applications of mathematics with critical thinking in a community of student practitioners. In this talk, participants learn about critical mathematical modeling as a classroom practice and are introduced to two applications of mathematical modeling using critical theory and social justice praxes. Participants will also be introduced to the Critical Engagement Pedagogies (CEP) framework and explore various mathematical models that can be applied in secondary and post-secondary mathematics settings. This talk will provide attendees with strategies for collaborating with students and curricular development in mathematical modeling with colleagues using digital tools. (Received August 06, 2018)