Student engagement usually implies that students are attentive and actively learning the topic being taught. In 2015, my colleague and I were asked to develop an online college algebra course. We were faced with the challenge of providing meaningful learning experiences in an online course where students are engaged in connecting real-world applications of functions and matrices in a college algebra course. The development of the course required collaboration with an online curriculum designer and the campus college algebra committee. This collaboration led to the development and pilot of the course during the fall 2017 semester. One challenge we faced was to incorporate hands-on labs from the face-to-face course in the online course. Videos and apps were created for students to collect and analyze data from a real-world situation. Students then collaborated in online groups to answer questions, discuss what they learned and what their learning meant in the context of the problem. Using data from the pilot, I will share lessons learned, quantitative data of student performance, insights from students and insights from the online instructor. This quantitative and qualitative data will determine how we improve the course to help students engage in the material in meaningful ways. (Received September 25, 2017)