We present a study that investigates user performance benefits of 3D stereo in modern video games. Based on an analysis of several video games that are best suited for use with commercial 3D stereo drivers and vision systems, we chose five modern titles focusing on racing, first person shooter, third person shooter, and sports game genres. For each game, quantitative and qualitative measures were taken to determine if users performed better and learned faster in the experimental group (3D stereo display) than in the control group (2D display). A game experience pre-questionnaire was used to classify participants into beginner, intermediate, and advanced gameplay categories to ensure prior game experience did not bias the experiment. Our results indicate that even though participants preferred playing in 3D stereo, for the games we tested, it does not provide any significant advantage in overall user performance. In addition, users' learning rates were comparable in the 3D stereo display and 2D display cases.