1163-A1-1252   **Jonathan P Keiter*** (`jkeiter@esu.edu`). *Using 3D Slices to Explore Partial Derivatives and Directional Derivatives.* Preliminary report.

I will describe two projects that have the students working with 3D manipulatives to explore the concepts of partial derivatives and directional derivatives. By working with interlocking wood sheets that form a surface on the top, the students have a deeper understanding of rates of change for functions of two variables. They see how the slopes in the x- and y-directions are independent of each other. Students working in groups will each have a surface created by interlocking sheets. They will investigate the surface and then remove two perpendicular slices (cross sections of the function) that meet at one point on the surface. They will then trace the curves created at that point on the two slices and estimate the slope. In a second project, the students learn how the slope of a surface changes depending on the direction and point chosen. On a point that is identified, the students will use a ruler to measure the height changes when they move to the eight corners that surround the point. They will use those measurements to estimate the slope in those eight directions. (Received September 15, 2020)