1125-E5-3037 **Sepideh Stewart*** (sstewart@math.ou.edu), 601 Elm Ave, Norman, OK 73019. *Examining linear algebra students' endeavors in moving between the embodied, symbolic and formal worlds of mathematical thinking.* Preliminary report.

Linear algebra is made out of many languages and representations. Hillel (1997, p. 233) suggests that "knowing when a particular language is used metaphorically, how the different levels of description are related, and when one is more appropriate than the others is a major source of difficulty for students". As Dreyfus (1991, p. 32) declares "One needs the possibility to switch from one representation to another one, whenever the other one is more efficient for the next step one wants to take. Teaching and learning this process of switching is not easy because the structure is a very complex one." We hypothesis that most students do not have the cognitive framework to perform the switch that is available to the expert. In this talk, employing Tall's three-world model, we present specific linear algebra tasks that are designed to encourage students to move between the embodied , symbolic and formal worlds of mathematical thinking. These tasks will be used to examine students' challenges with certain directions, for example, embodied to formal. (Received September 20, 2016)