Abstract

Visual representations are essential for communicating ideas in science; however, the design of such representations is not always beneficial for learners. This talk will present instructional design considerations providing empirical evidence and integrating theoretical concepts related to cognitive load. Learners have a limited working memory and instructional representations should be designed with the goal of reducing unnecessary cognitive load. However, cognitive architecture alone is not the only factor to be considered; individual differences, especially prior knowledge, are critical in determining what impact a visual representation will have on learners’ cognitive structures and processes. Prior knowledge can determine the ease with which learners can perceive and interpret visual representations in working memory. Although a long tradition of research has compared experts and novices, more research is necessary to fully explore the expert-novice continuum and maximize the potential of visual representations.