

Physics Department Seminar

May 2, Friday at 2pm In Science Building Room 250

From Passive to Active Learning: A Case for Expanding ISLE in Physics Education

David Medina

Effective physics education not only teaches students fundamental principles and mathematical formulae but also prepares them to think critically and develop problem solving skills. Traditionally, students are given a step-by-step lab meant to produce very specific results. Despite their prevalence, traditional cook-book labs do very little to engage students in thinking about the larger purpose of their investigations and the importance of the sequence of events they take to develop their conclusions (Hofstein and Lunetta, 2004). In contrast, the Investigative Science Learning Environment (ISLE) approach offers a hands-on, inquiry-driven framework that mirrors the real-life

scientific process. By engaging students in designing experiments, collecting and analyzing data, and testing hypotheses, ISLE shifts the learning experience from passive listening/following instructions to active discovery. Our review of the literature shows that students in ISLE classes developed a deeper understanding of the scientific principles they learned, were able to remember the content they practiced for longer, and could communicate their ideas better. Plus, as the students were able to demonstrate these abilities without any prompting or scaffolding and apply them to novel situations, it can be said that they also developed scientific habits of mind (Etkina et al., 2010).

