

Physics Department Seminar

Friday April 6th, 2007

11:00 am in PHSC 105

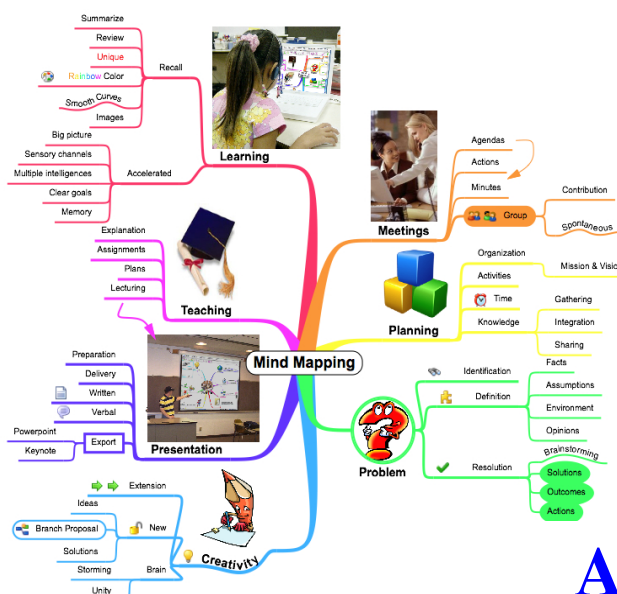
“Illogical Minds, Logical Science: How We Learn, How We Teach, and How to Improve Both”

CANDIDATE SEMINAR

Science Education Faculty Position
College of Natural Sciences

Dr. Leslie Atkins

Associate Research Scientist
LessonLab Research Institute



Abstract:

In this talk, I will argue that the products of physics--the things we put in research papers and textbooks, the proofs we write on chalkboards, and in large part the questions we ask on exams--are different from the ways in which we understand physics. While physics proofs and theorems exhibit a clear logic and map to experiment, these proofs and theorems are often brought about by the more slippery cognitive mechanisms of analogy, categorization and embodiment. In this talk, I will highlight key mechanisms of how the mind comes to understand ideas (with examples from math, language, and physics) and provide examples of how these mechanisms might be leveraged in instruction. If the goal of science education is to bring about the construction of scientific knowledge, our classrooms must shift towards engaging students in constructing knowledge, instead of emphasizing merely the products that such knowledge construction creates. This has broad implications for how we structure our classes, laboratories and assessments and will be discussed in this talk.