

Does mapping the big ideas in physics increase concept understanding and problem solving ability?

A common barrier to student learning in physics appears to be that they have difficulty selecting, organizing, and synthesizing the information to create an expert-like knowledge hierarchy useful when solving physics problems. To combat students' difficulty organizing new information, this project will help students build a "Big Ideas" Concept Map to aid them in organizing the guiding principles of Physics 215: General Physics II, Electricity and Magnetism. In an effort to emphasize the difference between physical laws (i.e. those "rules" that have no explanation other than their implied existence from experiments), definitions, derived knowledge, and applied knowledge, the instructor will stress a hierarchical structure for the concept maps, as appears to be most natural for the subject.