

A NanoLeap Into New Science: Instructional Materials for High School Physical Science and Chemistry

J. Ristvey, Mid-continent Research for Education and Learning (McREL), Denver, CO 80237

C. Morrow, SMART Bridges, Inc., Englewood, CO 80111

Y. Nishi, Professor (Research) of Electrical Engineering and, by courtesy of Materials Science and Engineering, Stanford University, Stanford, CA 94305

ABSTRACT

Nanoparticles are being used in an ever-expanding number of industries—electronics, pharmaceuticals, and energy, just to name a few. A 2001 National Science Foundation report, “Societal Implications of Nanoscience and Nanotechnology,” projected that as many as 2 million workers may be needed to support nanotechnology industries worldwide within 15 years. Clearly, we are standing at a critical juncture, or even in the midst of an industrial revolution. Now that nanotechnology has arrived, how do we prepare and educate our future workforce? The NanoLeap project is breaking new ground by developing and evaluating instructional materials that teach high school students about nanoscale science!

The curriculum modules, entitled A NANOLEAP INTO NEW SCIENCE, include student activities, experiments, multimedia, and assessments for use as replacement units in high school physical science and chemistry courses. Accompanying resources and professional development for educators are included to facilitate implementation of the modules. Materials are being pilot and field tested, thereby providing project staff with useful data to inform the development and implementation processes. A summative evaluation will assess the effectiveness of the project in achieving its articulated goals and impact on student achievement and teacher practice.