

## **Is There More Than One Method To Provide Quality Instruction?**

A number of national and international studies and student assessments, such as the National Assessment of Education Progress (NAEP), the Third International Mathematics and Science Study (TIMSS), and the Program for International Student Assessment (PISA), have highlighted the growing concern that U.S. students are falling behind in their knowledge and understanding of mathematics and science. As California wrestles with how to prepare its students with a solid foundation in mathematics and science, discussions revolving around the benefits of differentiated instruction methods have emerged to provide viable options in teaching methods.

Hands-on and inquiry-based methods of instruction have been utilized by a number of teachers and schools with great success and can be used to improve students' expository literacy skills while at the same building their understanding of math and science. Differentiated methods of instruction may help students establish a conceptual understanding of key concepts and to connect the abstract to the concrete and provide a real world meaning to math and science principles.

The PISA was an international study conducted by the Organization for Economic Cooperation and Development's in 2003. The test looked at whether 15 year olds can apply math concepts to situations outside the classroom. The results of the test noted that U.S. students ranked far below other industrialized countries in mathematics literacy and problem solving.

In order for California to prepare its students to succeed in a world constantly transformed by science and innovation, hands-on and inquiry-based methods of instruction can provide students with multiple paths for learning and give them the opportunity to personalize key concepts. Differentiated methods of learning can build off of principles learned through direct instruction. This would provide students with an opportunity to experiment with various tools and approaches to math and science in order to create an environment that encourages the development of learning habits and reasoning skills.

Mastering fundamental concepts requires not only grasping general principles, but also the development of an attitude toward learning and inquiring, which encourages problem solving skills. Additionally, hands-on and inquiry-based instruction along concrete materials will build student vocabulary and concept understanding. Furthermore, differentiated methods of instruction promotes a student's ability to discover more than one way to solve a problem. These students are then able to interpret what they have learned and provide creative solutions to problems.

Along with California's focus on ensuring that students have instructional material that meets the state's content standards and curriculum framework for each grade, differentiated instruction could enhance a child's problem solving tool-kit and help students develop the necessary critical thinking skills to succeed in today's society.