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Meeting the World's Needs for 21st Century Science Instruction – a synthesis of research and best practice

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Abstract content (Max 300 words) **Formatting & Special chars**

This paper draws upon a review of the research and expert opinion related to science education, the use of technology in the classroom and how instructional resources provided by PASCO can support science education initiatives. Five key findings are reported: the worldwide need for qualified science, technology, engineering, mathematics (STEM) professionals; the necessity for “scientific literacy;” the role technology plays in deepening students’ understanding of science concepts; how inquiry-based science can increase student motivation and interest in science; and examples of how PASCO technology has improved student understanding and engagement in science around the world. Review of research from leaders in science education confirms the positive impact, value and efficacy of a technology-supported instruction. This paper examines the economic and social benefits for individual students, future workers and countries as reported from UNESCO, National Science Board, and the U.S Congress Joint Economic Committee. The call for students to be more “scientifically literate” and gain experience in the practice of doing science includes knowledge beyond the facts, but also an understanding about the practices of science. Blending technology into data collection, analysis and visualization as part of an inquiry-based instruction has been shown to deepen understanding. Examples of how low-cost, hands-on experiences can support scientific understanding while stretching precious resources further are provided. Case studies of how this technology has improved student understanding and engagement in science are also provided.

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