



the **ENERGY** lab

TECHNOLOGY TRANSFER SUCCESS STORY

NETL Collaboration with National Geographic Society Garner Nominations for Three Awards in Online Educational Material

As the technical workforce ages, the United States and National Energy Technology Laboratory (NETL) face a potential shortfall of skilled scientists and engineers. NETL encourages more U.S. citizens to prepare for technical careers, while recognizing the added value of foreign-born scientists and engineers. Our Nation's research universities have seen decreasing numbers of native-born U.S. citizens in their technical graduate programs, encompassing only 48 percent of current Ph.D.s under the age of 45 performing research in the United States. At the same time, over the past 10 years there has been a 20 percent reduction in science degrees and a 34 percent reduction in engineering Ph.D.s of U.S. citizens.



NETL recognizes the need to strengthen our national research pool and is committed to helping prepare the next generation of scientists, engineers, and researchers in the United States. We are doing so by effectively leveraging the expertise and outreach efforts of our professional staff, our research facilities, and our research programs. Our efforts in education will also help us achieve our goals in research

and innovation. To help produce the next generation of researchers, NETL is taking action in three key ways: (1) Helping inspire our youth (***Transferring the Spark***); (2) providing the environment for learning skills required to perform research (***Mentoring and Experiential Learning***); and (3) providing tools and materials to our education system for K-12 science and math programs (***Equipment and Teaching Tools***).

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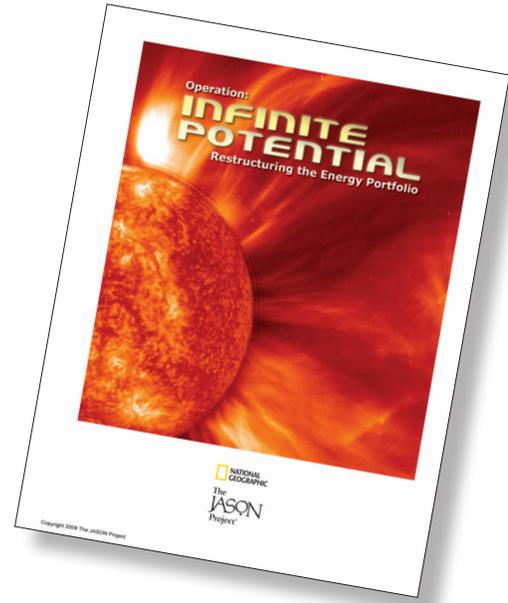
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A student's desire to pursue a lifetime of learning in the sciences, engineering, or math is often inspired by a triggering event or experience that evokes enthusiasm and curiosity. It is essential that children be given as many opportunities as possible to recognize that science can be fun and rewarding. Many opportunities are lost because children dismiss science, technology, engineering, and math (STEM) career paths as boring. The National Geographic Society initiated the JASON Project to motivate middle school children about science through participation in inquiry-based science. JASON immerses students in the mission theme by framing each curriculum around five core elements delivered via print, video, HTML, and interactive games. The core elements are: (1) meetings with the researchers; (2) an invitation to join the mission team—mission objectives; (3) mission briefings; (4) mission labs—what science knowledge is required and why; and (5) field assignments.

Fieldwork comprises inquiry-based assignments. Students synthesize and evaluate new, real-world scenarios, mimic researchers' fieldwork, create an experimental design, and make and record observations. JASON asked NETL to collaborate on the development of an energy education module. NETL Researcher Larry Shadle served as host



researcher for Mission 3: Power to the People. Shadle engaged the Argonaut student guest researchers in his project using circulating fluidized bed technology to efficiently capture CO₂ from fossil power plants and maintain environmental controls. Reflecting the students' enthusiasm, Shadle said, "When I work with the Argonauts, I get energized!"



The result was *Operation: Infinite Potential*, an energy curriculum with print, video, games, and online resources, including footage shot on location at NETL's Morgantown facility. JASON will distribute the energy curriculum to thousands of teachers and students in the United States and worldwide.

In February 2010, The Software & Information Industry Association awarded JASON's *Operation: Infinite Potential* the 2010 Finalist Awards in Three CODiE categories: Best K-12 Instructional Solution, Best Online Instructional Solution, and Best Education Game or Simulation.

