Education and Relevancy
Views of the national parks

By Bruce Nash, Erika Matteo and David Krueger

"Could you take that natural resource information and put it in a form that would be more accessible to interpreters and the public?"

— Interpretation staff
Petersburg National Battlefield

When we heard this request, we were building an information management system for National Park Service resource managers that organized reports, analyses, databases, maps and other data gathered in parks. The question generated a wave of ideas on how raw data could be transformed into interpretive information appropriate for the public. Gradually a plan emerged that combined accurate data, drawn from the entire National Park System, with interactive computer graphics and multimedia that would present the information in a manner simultaneously engaging and relevant to the user.

Views of the national parks
This approach to resource data led to the development of the Internet-based educational program Views of the National Parks. Views presents information and issues from individual parks and from themes that reach across many national parks. Views engages users by presenting the information through multimedia and enhances learning by integrating natural and cultural resources, incorporating fine arts such as poems and songs, adding multicultural perspectives, and providing ways for users to connect with their national parks.

Discover all that Views has to offer at www.nature.nps.gov/Views. Here you can explore panoramas of ecological communities at

△ Image above: Classroom teachers examine benthic invertebrates to determine stream health. They are part of the NPS “Earth Science in Context” program, which uses national parks as outdoor laboratories. All photos courtesy of National Park Service
Whiskeytown, interact with the rock layers of the Grand Canyon, listen to park rangers discuss wilderness issues and impressions, hear a song written about bats, see the work of artists-in-residence at Badlands and listen to soundscapes from Point Reyes.

Multicultural perspectives and personal narratives broaden the relevancy of the program. In the Sonoran Desert module, Lorraine Eiler, former president of the International Sonoran Desert Alliance, talks about life in the desert, how her people (the Hia C-ed O’odham) used desert plants, and how she works to preserve desert resources and sacred places. Users can virtually hike an ethnobotanical trail (available in both English and Spanish) in the Organ Pipe Cactus module and get an international perspective on desert resources from resource manager Jose Avila (El Pinacate y Gran Desierto de Altar Biosphere Reserve in Mexico).

In the Wilderness module, discover more than 60 personal narratives on various aspects of wilderness and wilderness management. For example, Ed Zahniser, son of the primary author of the Wilderness Act of 1964, talks about spending time with prominent individuals in the 1960s wilderness movement. These human connections increase the relevance of Views as an educational tool.

**Becoming more formal**

Through presenting Views to teachers at professional meetings, such as the National Science Teachers Association, or NSTA, in 2005 and 2006, we learned to make the information relevant to students and educators. The teachers were excited about Views and national parks, but they wanted formal educational resources to incorporate national parks into existing curricula. We met this challenge by initiating a partnership with the University of Colorado Denver School of Education and Human Development.

This partnership has generated many educational materials that use the resources and issues of national parks to create genuine, inquiry-based experiences for students. This includes lesson plans, educational curriculum guides, references to appropriate teaching standards, lesson handouts and bookmarks with activities. All of these are accessible in Views via the Teachers’ Lounge.

With Views and accompanying educational materials in hand, we next went to the 2007 Denver Regional NSTA meeting to offer four one-hour workshops. Teachers were presented with an overview of Views, and then they worked through different hands-on exercises (determining biodiversity along a transect, using NASA imagery to track glacial retreat, identifying fossils and more). The activities were presented in a format that teachers could use in their classrooms, combining the information in Views with an activity the students could perform.

The success of these workshops led to the development of a full-day workshop for teachers on using Views in the classroom. These workshops, sponsored by the National Science Foundation-funded Rocky Mountain Middle School Math and Science Partnership, were offered in 2009 and 2010. Participating teachers alternated between explorations of Views and hands-on exercises from complementary lessons.

The Views team also participated in the Denver Museum of Nature and Science’s Educators Night, interacting with educators and representatives from other educational entities. These venues provided opportunities to demonstrate our products and receive feedback on the quality and relevancy of our materials, and suggestions for incorporating NPS materials in classrooms.

**Education evolution**

In 2009, the Middle School Math and Science Partnership asked the Views team to
People will value, cherish and protect things that are meaningful or relevant.

Every day in the classroom, instructors presented a hands-on activity that made the lecture relevant. For example, after learning how earth materials were used in Civil War uniforms and equipment, a Civil War re-enactor entered the classroom and provided an opportunity to examine the objects mentioned in the lecture. Other activities involved soil texturing, plotting climate data and exploring different sources of air pollution. All activities were provided to the teachers so they could use them in their classrooms.

Three days were spent in the field with the instructors getting first-hand experience with the resources. Two NPS sites — Florissant Fossil Beds and Rocky Mountain — were visited, as were other local earth science sites like Cave of the Winds, Florissant Quarry, Dinosaur Ridge, Fossil Trace and Red Rocks City Park. These field trips allowed teachers to interact with both the instructors and the subject matter, turning abstract concepts into reality.

Teachers explored an undeveloped cave while learning about cave features, formation and management issues. They hiked among petrified tree stumps while learning about paleontology, soil surveying and the local cultural history. They then split shale and collected fossil specimens for their classrooms. In Rocky Mountain, teachers visited air quality monitoring stations; searched riparian corridors for ozone injury on plants and aquatic invertebrates; conducted water sampling tests; and looked over mountainous vistas sculpted by glaciers.

On yet another field trip the teachers walked a trail that took them through the Jurassic and Cretaceous periods; discovered evidence of life during those past periods; discussed preservation issues and the challenges of interpretation; and learned about the changing Rocky Mountains landscape and how geologists deal with gaps of time missing from the geologic record.

A capstone project provided continuity and reinforced topics explored in the course. Groups of five students were tasked with creating a national park and integrating key resources from the course into a general management plan for their park. Each group member rotated through the roles of superintendent, scientist, ranger, interpreter and maintenance worker to learn how to apply earth science information to park management from multiple perspectives. Groups gave 20-minute presentations and took questions from their classmates. The capstone project was later adapted by at least one teacher for use in her classroom.
Clay and craft materials become exotic new creatures that are adapted to national park ecosystems.

Students at the STEMapalooza Conference add their personal messages (pictographs) to the "rock wall" at the Views booth.

Child's play
The Views team has made a strong effort to provide teachers with NPS-based educational materials and training on how to effectively use the materials in the classroom. We have also taken national parks directly to school children. The team has used Views as a multimedia springboard to engage school children in kindergarten through fifth grade.

In 2008, STEMapalooza was established in Colorado. The intent of this conference was to bring together the entire STEM (Science, Technology, Engineering and Mathematics) education community, including government agencies, private companies, nonprofit groups, museums, school administrators, teachers and school children.

Views has participated in STEMapalooza for three years running. The first year drew about 3,500 visitors, most of them school children from Denver Public Schools. We handed out materials and displayed a few activities. The conference was judged a success, but our yardstick for measuring success was about to change.

The following years we set up a second booth dedicated to hands-on activities, including investigating the relationship of topography to water movement within watersheds, using craft materials to create an organism adapted to one of several selected park environments, and reconstructing a dinosaur from excavated "fossils."

One prominent activity was the "Rock Wall – Rock Art" activity. In a typical presentation, the leader would talk about petroglyphs and pictographs, the interpretation of the designs, the personal messages that the symbols represented and the importance of preservation. Students were invited to paint a personal message on our pretend rock wall (butcher paper hung from a frame). Messages ranged from names and symbols, to the deeply personal "R.I.P. Big Bro." Approximately 15 panels per year were filled with messages from Denver area school children. By 2010 STEMapalooza gave Views an opportunity to interact with more than 12,000 kids and adults, many from underserved audiences, who we wouldn't have met otherwise.

Full circle
Our work can be seen as a model for other parks or regions to adapt. All of our efforts are easily repeatable and are relatively low-cost. Partnerships pairing educators with local experts, whether from federal agencies, private companies, not-for-profit groups or retirees, can bring engaging educational opportunities to teachers, students and even new employees. Presenting the information within a national park framework increases relevance and fosters connections with parks.

Relevance is a word with many definitions, but at its core is the concept that to be relevant is to be meaningful. People will value, cherish and protect things that are meaningful or relevant.

To successfully meet its mission objectives, the NPS must have the support of all Americans, and for that, relevance is the key.

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In the end, we will conserve only what we love.
We will love only what we understand.
We will understand only what we are taught.

— Baba Dioum
Senegalese conservationist