

Status of Project, September 22, 2009

Rocky Mountains Cooperative Ecosystem Studies Unit (RM-CESU) RM-CESU Cooperative Agreement Number: H1200040001

TITLE OF PROJECT: Developing Education Resources, “Views of the National Parks,” phase 6, modification of UCOD-06/21/22/24/33, J2370041435; Developing Education Resources, “Views of the National Parks,” phase 7, modification of UCOD-06/21/22/24/33, J2370041435; Developing Education Resources, “Views of the National Parks (“Storms” and “Remote Sensing of Coastal Resources” modules).”

Background

“... the National Park Service embrace[s] its mission, as educator, to become a more significant part of America’s educational system by providing formal and informal programs for students and learners of all ages inside and outside park boundaries.”

— National Park System Advisory Board, “Rethinking the National Parks for the 21st Century”

The National Park System is a magnificent outdoor classroom for teaching and inspiring students. Exploring the many parks in the system is like taking a visual trip through a library of books on the natural and cultural worlds. Coastal processes and mountain-building, volcanic landforms and fossil remains of times past, ecological science and nutrient cycling, nightsky and daytime viewsheds, invasive species and cultural connections among peoples and to the land. All of these topics may be explored in our national parks – and to that end the National Park Service (NPS) has initiated an interactive, multimedia education system named “Views of the National Parks (Views).” An old Views welcoming page is still a valid description of the project:

“Welcome to Views of the National Parks. The United States’ national park system is a magnificent quiltwork of people and places stitched seamlessly in the fabric of the American experience. Come, explore this mosaic where the natural world and our cultural heritage are deeply intertwined. Investigate natural wonders and the powerful forces that sculpt them. Discover how the natural landscape has shaped - and been shaped by - the American people. Recognize the uniqueness and diversity of our many cultures and celebrate the threads that join us all as Americans. Connect with the stories of your national parks, and “Experience your America.”

People will protect what they understand. It is the responsibility of the NPS to help all its citizens understand the natural and cultural resources in our parks so they can become responsible stewards of our all planet’s resources. Views is one tool in the NPS education/interpretation toolbox.

Views Architecture

Originally the pages in the Views system were written using HTML. While this provided a means to make the system available on many platforms (computers, the internet, visitor center kiosks, etc.) it limited the ability for the Views staff to modify and update pages in a timely

manner. In addition, while it was aesthetically pleasing to see a different user interface for each module, it was very time-consuming to design and produce these interface. For these and other reasons, the Views staff began discussing options for a new Views architecture at team strategic planning meetings in 2006. After investigating several approaches, the team decided to move to an XML-based system that used templates as a means to input information. Rather than unique user interfaces for each module, the system would have a standard interface which did not vary. Adobe Flash would be used to present the information on-screen. The new system was designed, reviewed, tested, revised, and first implemented in 2008. The “Biodiversity at Whiskeytown National Recreation Area” module was the first existing module that was migrated from the HTML format to the new XML/Flash format. The new architecture was well-received and the team has continued to migrate HTML-based modules to the new format. All new modules (e.g., PAAL, GUMO, GRCA Geology) are developed directly in the XML format.

Views of the National Parks is modular. It consists primarily of two different types of modules: park-based (park) modules and thematic modules. The park modules provide multimedia gateways to park-based educational experiences. They help park interpreters and education specialists reach a greater number of people, including park visitors that do not have time to take a ranger-led tour, students in classrooms (local and distant), handicapped visitors who cannot reach remote park sites, or members of the public unable to visit the park. Park modules are designed to stimulate interest in actual park visits and each module includes information to facilitate park visits.

Park modules also allow interpreters and educational specialists to re-create historical, natural, and cultural landscapes. The ability to experience vanished landscapes will provide a new understanding of the past and of the processes that created the landscapes we see today. Thematic modules present general information and principles on a variety of natural or cultural resource themes. They provide the basic knowledge required to better understand and appreciate the natural processes or cultural/historical backgrounds that shaped our national parks.

Thematic modules provide a means of connecting national parks that share natural/cultural resource themes and also to provide linkages to citizens across the country, whether they live in an urban or rural environment. This is a significant contribution of the Views program. It provides a framework to seamlessly link information from parks across the entire National Park System as well as to include background information. This national scope is emphasized in the new Views “Map Room” which uses maps of the United States as gateways to information on all our national parks.

Another type of component within the Views system, is the “case study.” These are small units, usually consisting of a single image and several paragraphs of information. They are used to illustrate the current topic with a national park-based example. These units may be found attached to the maps in the Map Room, and as information windows scattered throughout many of the thematic modules. In some cases, park staff have worked with the Views team to enlarge the scope and size of a case study so that it reaches module status (e.g., Petroglyphs National Monument).

In addition to the components mentioned above, Views now contains a “Teachers’ Lounge. Accessed from the Views opening screen or from any of the XML-based modules (via the “Search” field), the Teachers’ Lounge provides lesson plans, educational curriculum guides, information on teaching standards, and other educational resources. As part of the move to the new architecture, the educational component was redesigned and given more prominence.

The “Information” section is also accessed from the main Views page. It offers instructions on using the program, contact information, and news events (current and archived) concerning Views. On-screen assistance for the user interface is also available from most Views windows.

Creative Approach

Views has been a successful project because it has attracted a cadre of very dedicated and talented individuals and because the “creative process” is based on eight important principles which have led to quality products.

- 1) Fully involve park staff or subject matter experts throughout the entire process.

From the initial conceptual design to the final published product, park staff and/or subject matter experts play a central role in all aspects of module construction. These people know the information and the best ways to present that information. Since each set of experts takes a different approach, each new module is fresh and exciting. This approach also builds “buy-in,” which ensures the completed product will be used. This process also fosters communication and cooperation among staff from WASO, parks, regions, universities and other partners. For park-based modules, the Views team strongly encourages participation by both subject matter experts and interpreters/educators.

- 2) Present accurate and timely information

All information presented in Views is collected, synthesized, and reviewed by park and/or subject matter experts. The success of this approach may be seen at the “Best of Science Websites” created by WGBH Educational Television and the DLESE (Digital Library for Earth Science Education) website. Currently, six earth science-based Views modules have been selected for inclusion by these websites. The Wilderness module was cited as a “quality wilderness education website” in a 2005 article on wilderness education in the International Journal of Wilderness (G. Hansen and T. Carlson, 2005). The Spanish version of the Wilderness module was highlighted on NPS.gov and was the subject of an NPS Press Release. To date (09/14/2009), seven Views modules have been highlighted on the main page of NPS.gov. As a testimony to the accuracy and value of the Views program, the National Science Foundation-funded Rocky Mountain Middle School Math and Science Partnership (RMMSMSP) funded the Views team (UCD partners) to a) present guest lectures and labs, b) conduct teacher training workshops, and c) present a 2-week teacher training course on Earth Science.

- 3) Integrate natural resources and cultural resources

Natural and cultural resources are often intimately intertwined. One influences the other and the story of that interaction is fascinating. The NPS is America’s Storyteller – it is our responsibility to fully engage our visitors in the rich fabric that is woven from both the warp and the woof – the natural and cultural resources – of our country. Most Views modules present at least some integration of natural and cultural resource information

- 4) Present information from multicultural perspectives

As America’s Storytellers, it is our responsibility to present information from multiple cultural perspectives. While it is important to know the scientific facts concerning a

particular species of plant, it is equally important to know how different peoples incorporated that plant into their culture. If we listen to each other's stories, we will better understand each other, which will enrich us all. Many Views modules present information from multicultural perspectives. Portions of some modules have been translated into Spanish and the Wilderness module (and all its handouts and lesson plans) has been completely translated into Spanish.

5) Provide well-designed and easily accessible educational resources

The future of our parks depends upon the willingness of the public to protect these special places. People will protect what they understand. By providing Views with a solid educational foundation, including information on all relevant national teaching standards, we will facilitate its incorporation into school curricula and park-based presentations. Learning about these places will bring appreciation of the park system and acceptance of the responsibility to protect these special places. Many lesson plans and curriculum guides have been written for Views modules. The team has also been active in teacher training with the RMMSMSP, CASMIC (Center for Applied Science and Mathematics for Innovation and Competitiveness), the National Science Teachers Association Conferences, the Denver Museum of Nature and Science Educators Night, and many activities with the University of Colorado Denver School of Education and Human Development.

6) Use modern techniques to inspire and teach

We live in Multimedia Times. Messages are short, concise, and simultaneously stimulate many of our senses. The Views Project must accept the challenge to capture the interest of a public expecting exciting multimedia. Modern technology should be used effectively - as both an educational and inspirational tool. The Views program uses interactive graphics, 360 degree panoramas, 3-D images, sound files, and short movies/interviews to engage students and the public.

7) Integrate science and the arts

Views seeks to engage both the "right brain" and the "left brain." Science, math, and the scientific method are important parts of our world. But so are poetry, song, music, and literature. Our parks have always been a source of inspiration for great artists and writers and for the general public. We should celebrate this aspect of our parks by fostering an appreciation for the creative influence of our national parks. Views modules feature songs, music, literature, etc. wherever relevant to address the "inspirational" side of national parks.

8) Provide the opportunity for personal connections to park resources

Even our smallest parks offer a cacophony of sights, sounds, smells, and ideas. Which ones are the most important? The ones that touch you as an individual. The ones which somehow forge a bridge between your experiences and the wonders that park have to offer. Once forged, that special connection will endure. Views must provide the raw materials as well as the opportunity to build those bridges.

Module Production

Production of a Views module is a team effort and requires a variety of skills. Typically, a new module is suggested by a domain expert or park staff person. If approved, the Views staff, subject or park experts, and appropriate NPS/university partners develop an outline that presents the information in an organized format. From this outline, a “script” is written that will provide the on-screen text. The script is usually prepared by either a contract technical writer or park staff, although some scripts have been written by Views staff. Following review, revision, and final script approval, domain experts and Views staff identify complimentary images and multimedia resources. Depending upon the script, Views modules have employed: panoramas (up to 360 degrees and full overhead coverage), interactive diagrams, digital movies, soundscapes, 3-D images (using red-blue glasses), etc. Emphasis is on the effective use of these techniques. If necessary (and funds available), a Views team will visit the subject park and obtain the imagery and multimedia. Each module is designed and assembled to meet the specific needs of the park or subject matter, but also must meet standard design requirements to ensure a seamless blend with all existing Views modules. The first step is to add text (from the script) into standard XML templates. In the development copy, text can be seen as it is added to ensure that the amount of text per page and spacing is appropriate. Next, images and multimedia assets are selected, added to the proper Views directory and then linked within the templates. When all of the text and multimedia assets are added, via templates, the completed module is then reviewed to ensure all design elements, text, multimedia, and navigational elements are correct and working properly. Search terms are selected for the module and added to a program database. If a professional educator was available to prepare a complimentary lesson plan/educational curriculum guide, then it is linked to the module and to the Teachers’ Lounge. At the current time, the target audience for Views is the general public and middle school-age students. All of the work described above would have been completed within an internal development copy of Views (i.e., not available to public). When all components have been reviewed, the final step is to add the module to the public Views website and the Views DVD (updated approximately once per year).

Involvement with the University of Colorado at Denver School of Education and Human Development

In 2005, faculty and students from the University of Colorado Denver (UCD) began to work cooperatively with NPS personnel on the Views project. The modules built for this project use multimedia techniques to present high quality science and cultural resource information to the public and school children. To make these modules more effective, the NPS has partnered with the University of Colorado Denver so as to utilize their education expertise for the preparation of lesson plans, educational curriculum guides, references to national teaching standards, etc. In order to provide a balanced learning opportunity for their students, UCD has also drawn on NPS expertise to teach their students how to capture multimedia assets in the field and how to assemble the final modules using computer-based graphics programs.

UCD faculty, staff, and/or students have worked with NPS staff to provide computer and educational expertise for selected Views. This work has involved several critical areas in Views module development, including 1) module design and asset collection, 2) graphic design and assembly, and 3) development of supporting educational materials.

Module Development by UCD Staff

Views modules are developed under a team approach, however a number of modules have been developed (or migrated to the new architecture) with a UCD staff person serving as Lead. These modules would include: Petroglyph National Monument, Sonoran Desert, Florissant Fossil Beds National Monument (migration), Badlands National Park (migration), Geology of Grand Canyon National Park, Fort Bowie National Historic Site (migration), Pu 'uhonua o Honaunau National Historic Park, and Volcanism. Although specific tasks varied by module, UCD researchers worked with NPS WASO, park, and regional staff to develop a module outline, prepare a list of required multimedia assets, design the module interface, and/or prepare a module script. UCD staff assembled the needed assets (including multimedia capture in the field) and then populated the module with appropriate text, multimedia assets, and graphics. The UCD researchers linked all multimedia and text to appropriate locations within the module and ensured seamless integration with the existing Views system.

Work has been initiated on the Chesapeake Bay module, focusing on local resources and issues, but also containing information applicable to the entire NPS System, especially in the areas of ecosystem science and conservation. Several Views staff have contributed to the preparation of the Chesapeake Bay module script, however a UCD staff person has been the Lead on responding to all external review comments.

UCD faculty, researchers, students, and staff have participated in almost all aspects of Views module development - from designing modules, to module production, to module review and implementation. UCD personnel also played a critical role in developing the new XML/Flash architecture and new user interface mentioned above. UCD personnel attended all project strategic planning sessions in 2006-2007 and offered many suggestions that have become important parts of the Views program.

Status of Multimedia Deliverables

Petroglyph (PETR) National Monument – Completed and migrated to the new format. Overview of volcanic processes at PETR, local rocks, the importance of volcanic features to Native Americans, and an interactive rock art feature. This case study was created by the UCD Multimedia Specialist in partnership with PETR. Staff from PETR presented the module (and the rest of Views) at the 2006 (and subsequent) New Mexico State Fair.

Sonoran Desert Knowledge Center – Completed, but not migrated to the new format. Includes basic scientific information on the Sonoran Desert (flora, fauna, paleo-astronomy, climatology, etc.) as well as multicultural viewpoints of the desert (Mexican resource managers from El Pinacate y Gran Desierto del Altar Biosphere Reserve [Sonora, Mexico], member of the Hia-Ced O'odham people, a bilingual ethnobotany trail, and a bilingual curriculum on desert ecology developed by the Environmental Education Exchange). The module has many interviews, panoramas, videos, and interactive graphics. Featured parks include: CAGR, MOCA, ORPI, SAGU, TONT, TUMA, and TUZI. This module was created by the UCD Multimedia Specialist, working with subject matter experts at the University of Arizona and IMR parks.

Florissant Fossil Beds (FLFO) National Monument - Completed and migrated to the new format. This module, which explores paleontology and early settlers at FLFO, was developed by NPS and FLFO staff. The cartoon story within the module was drawn by a

UCD student intern. The module was migrated to the new format by the UCD Multimedia Specialist.

Badlands (BADL) National Park - Completed and migrated to the new format. This module, which explores paleontology, prairie ecology, Native Americans and early settlers at BADL, was developed by NPS and BADL staff. The module was migrated to the new format by the UCD Multimedia Specialist.

Grand Canyon (GRCA) National Park Geology – Completed and migrated to the new format. GRCA staff wanted a Views module on GRCA geology, but the Views team was unable to meet the park’s desired delivery date. Therefore, the park started their own module, using the Views “look-and-feel,” to facilitate eventual incorporation into the Views program. The park produced a website which included much of the planned information and turned this website over to the Views team in May 2007. At that time the UCD Multimedia Specialist was put in charge of the module and she began working with GRCA staff to produce a GRCA Geology module for Views. As production proceeded and the new version of Views was developed, the decision was made to combining the existing GRCA Wildlife module and the new GRCA Geology module. That work was completed in 2008. The script was written by GRCA staff and was reviewed for technical content by a panel of geologists familiar with Grand Canyon geology. NASA Mission Mars contributed a animated Grand Canyon “fly-over.” The module also links to the NASA Mission Mars fly-through of Valles Marineris and will eventually include a “fly-through” that links both canyons. By mutual agreement, the addition of several other planned multimedia assets (geologist interviews) will wait until additional funding can be identified.

Fort Bowie (FOBO) National Historic Site - Completed and migrated to the new format. This module, which explores the historic and cultural resources at the Fort, as well as some of the local natural resources, was developed by NPS and FOBO staff. The module was migrated to the new format by the UCD Multimedia Specialist.

Pu ‘uhonua o Honaunau (PUHO) National Historic Park - Completed and migrated to the new format. This module, which explores the historic and cultural resources at the City of Refuge, as well as some of the local natural resources, was developed by NPS and PUHO staff. The module was migrated to the new format by the UCD Multimedia Specialist.

Volcanism Module - Completed, but not migrated to the new format. This module presents basic information on volcanoes and topics associated with volcanism and igneous rocks. The purpose of the module is to provide basic information to the user so she/he can better appreciate volcanic parks in the National Park System. The lead developer on this module was the UCD Multimedia Specialist.

Palo Alto Battlefield (PAAL) National Historic Site – Completed and migrated to the new format. PAAL staff contracted with a university to produce a website featuring ecosystems and flora/fauna of PAAL. After seeing the Views program, PAAL asked the Views team to work with their contractor to ensure the website had a Views “look-and-feel.” When the final product was delivered to PAAL, they asked us to rework the website, creating a tighter connection to Views. Upon review of the product, we suggested rewriting much of the script (= on-screen text) and replacing the many copyrighted images with public domain images. The park staff agreed with these

suggestions and worked with the Views team to implement them. This work has been done primarily by NPS Views staff and is included in this report to provide information on an IMR park in Views.

Guadalupe Mountains (GUMO) National Park – Completed and migrated to the new format. The script for this module was written by park staff and reviewed by the Views contract writer/editor and WASO GRD staff. This module focuses on paleontology and especially on a virtual trail through the Permian Reef formation in GUMO. It also provides information on an individual central to preserving the park resources. This work has been done primarily by NPS Views staff and is included in this report to provide information on an IMR park in Views.

Geologic Time Module – The script is complete (including several internal and external reviews) and entered into Views XML templates. This ambitious module has been under development for a number of years. Although initially an NPS effort, in December 2006, the Denver Museum of Nature and Science joined this project. Dr. Kirk Johnson, Vice President of Research & Collections, Chief Curator, and Curator of Paleontology, reviewed the entire Geologic Time and Paleontology scripts. He has also offered Museum assistance in collecting imagery, multimedia, etc. Staff from IMR has played an important role in this project by providing review comments and suggestions on how to best present the material. Many IMR parks are included as case studies in this module. IMR Interpretation staff has suggested this module as a framework to provide region-wide (and possibly service-wide) geologic information and competency certifications. The current Lead on this project is the UCD Multimedia Specialist.

Paleontology Knowledge Center -- This module has been developed in conjunction with the Geologic Time module. All of the comments for Geologic Time module are applicable for the Paleontology module.

Coastal Geology “Storms” Section and Use of Remote Sensing to Monitor Coastal Features - Incomplete. Two staff visited Cape Lookout National Seashore and collected extensive amounts of photographic images, interviews, and movies (some airplane-based). This park unit will serve as the focal point on a “Storms” section for the existing Coastal Geology module. Text is still being written for this section. Additionally, a basic introduction to remote sensing will be written and examples provided to illustrate how this technology can be used to inventory and monitor coastal resources.

Related Projects (separate funding)

Spanish Translation of the Views Wilderness Module - Completed, but not migrated to the new format. The translation was completed (over 100 pages of English text) and all of the English text was replaced with Spanish text (by Arthur Carhart National Wilderness Training Center personnel) in the separate Spanish version of the module. Although this work did not directly involve UCD staff, it was facilitated by the partnership that has evolved among the Views Project, IMR, and UCD. The Spanish Colonial Research Center (SCRC)(Albuquerque, NM) and the Arthur Carhart National Wilderness Training Center provided the expertise and funding to translate the Wilderness module into Spanish. Needing a reviewer, Bruce Nash contacted Bill Gwaltney at the IMR, who suggested Ms. Susan Boyle (NPS retired, Santa Fe, NM). Susan provided review comments, which were incorporated by the SCRC. A number of

IMR parks are included in this module, including case studies at ROMO and ORPI. The lesson plans included in this module were written by a UCD graduate student and later translated into Spanish by another UCD student. A one-page handout describing the modules was written in English and later translated into Spanish. Lastly, five 1-page handouts were written to describe each of the lesson plans. These handouts were also translated into Spanish.

Educational Products Developed by UCD Staff

The Views Project strives to provide educational material on the National Park System for both informal and formal educational settings. To meet these education-based goals, a UCD educator was hired to write curricular materials and provide in-house educational expertise to the Views staff.

Status of Educational Deliverables

This educator, who recently left the Views Project, completed a number of different materials, including:

A set of educational curriculum guides that offer 1-week, 2-week, and comprehensive sets of lessons and activities for the “Caves and Karst” module. The guide was reviewed by Ron Kerbo, retired NPS Cave and Karst National Coordinator and several other staff persons in the NPS Geologic Resources Division (GRD). The guides are available as pdf documents on both the Views website and DVD. Educators may access individual lessons/activities or the entire guide(s) and can be printed or used on-line.

An educational curriculum guide on “Glaciers.” This guide was reviewed by a WASO GRD staff person. Portions of the guide were also reviewed by an NPS educator at Kenai Fjords (KEFJ) National Park. This set of lessons includes one that was developed in partnership with the NASA Landsat Program. This lesson involves comparing paired Landsat images of Bear Glacier at Kenai Fjords (KEFJ) NP that were taken a number of years apart. The student uses a “dot grid” to compute areas (by year) and then determine the extent of glacial retreat. This activity was reviewed by the KEFJ educator.

Four lessons for a planned curriculum guide on The Chesapeake Bay are in draft form.

The Education Specialist (with assistance) developed four 1-page (two-sided) handouts on lessons for teachers using the Views Program. These color handouts provide introductory material and an abbreviated version of the four lessons. Appropriate age groups are indicated for each. The lessons present: cave art (using “natural” pigments), watershed characteristics, glacial movement, and benefits of natural camouflage.

A webquest was produced (printed and electronic formats available) for the “Geology of the National Mall” module.

The Educational Specialist led or participated in a number of presentations and workshops. These presentations involved team planning and preparation and were coordinated under the direction of Dr. Mike Marlow (UCD). They included:

National Park Week 2006 (Trailblazer Elementary School, Highlands Ranch, CO)
Graduate-level Education course UCD (4-hour workshop)
National Science Teachers Association Annual Conference (2007, 2008, 2009)
National Science Teachers Association Regional Conference (2008) (4 one hour workshops)
George Wright Society National Meeting (2009)

All educational tasks were mutually decided by NPS and UCD, and coordinated by Dr. Mike Marlow (UCD).

Additional educational materials were produced by both the UCD Educator and the UCD Multimedia Specialist (who also has formal training in education). These presentations, workshops and materials were a combined effort, often including NPS personnel. These deliverables include:

Professional development course for middle school teachers (Views presentation, Views “scavenger hunt,” hands-on activity using Views wilderness data)
Bookmarks presenting the 4 lesson plans indicated above and the Views URL
Denver Museum of Nature and Science Educators Night (Meet with educators and discuss Views; 2007, 2008, 2009)
STEMapalooza Conference (UCD staff presented age-appropriate information on the Views project to students [over 2500], teachers, and the public)

Using funding from the Arthur Carhart National Wilderness Training Center, UCD staff (salary funded under this Cooperative Agreement) organized and presented a workshop aimed at facilitating the use of the Spanish translation of the Views Wilderness module. As part of the workshop, each attendee was presented with a notebook containing educational materials. Amongst these materials were five different 1-page handouts describing each of the five lesson plans. These handouts are available in both English and Spanish (as are the Wilderness module and the lesson plans). The UCD Education Specialist and Multimedia Specialist presented an overview of the module and then discussed various ways to integrate the Spanish version of the module into classrooms, including “English as a Second Language” classes.

At the request of the NSF-sponsored Rocky Mountain Middle School Math and Science Partnership, the Views team presented two 1-day teacher workshops on using Views in the classroom. UCD staff helped plan these workshops and played a key role in presenting material and leading activities (June 2009).

Also at the request of the Rocky Mountain Middle School Math and Science Partnership, the Views team presented a 2-week content course for teachers on “Earth Science.” This effort was led by the UCD Multimedia Specialist. With NPS input, she developed the course syllabus, coordinated guest speakers, organized 3 field trips, provided classroom leadership, organized and led the “capstone” activity, and served as contact person for the entire class. Following the completion of the class, she collected copies of all classroom materials (presentations, lesson plans, student projects, etc.), and provided an organized copy of them in DVD format. This DVD has been requested by many of the class members, instructors, the Denver Museum of Nature and Science, and the NPS IMR. Lastly the Multimedia Specialist has established lines of communication between the

teachers taking the course and the Views team. Hopefully this will provide benefits to both the teachers, UCD, and the NPS. This course will be summarized in a “white paper” and may be written in format for a peer-reviewed publication.

Benefits for UCD

The Views/University of Colorado-Denver collaboration has provided numerous benefits to both partners. Some of the benefits to the University of Colorado Denver have been detailed in reports to the RM-CESU (slightly adapted):

Three employees/students (Kristen Lucke Nein, Erika Matteo, Maureen Craig) have been hired by funds provided from the Views Project. These individuals have received salary, but also professional experience working on a multidisciplinary project, training in the areas of multimedia, graphics, interacting with WASO/region/park staff, and working as a member of a large team.

In addition to the staff mentioned above, other UC-D students have participated in meetings and workshops, where NPS staff has provided training, equipment, etc. For example, the NPS conducted a multimedia training session for about 20 UC-D students/staff prior to their 2006 trip to Hawai'i Volcanoes National Park.

Bruce Nash (and Judy Geniac, WASO-GRD) represented the NPS at the kick-off meeting of CASMIC (Center for Applied Science and Mathematics for Innovation and Competitiveness) on the UCD campus. The Views team continues to interact with CASMIC and upon the request of the CASMIC Director, represented (October 2008) the Views Project and the NPS at a recent statewide education meeting called by the Governor of Colorado. The Views Project was asked to attend this year's meeting (October 2009) and will do so. At these meetings, NPS and UCD staff work in shared booth space and provide information on each other's programs.

Bruce Nash participated in a focus group composed of environmental educators to provide the School of Education and Human Development with information and suggestions for the proposed Informal Education concentration at UCD.

Bruce Nash participated on a School of Education and Human Development faculty search committee. A portion of the interview process included a discussion of how the candidate would add to the existing NPS/University of Colorado Denver partnership. One of the three candidates was hired by the university and arrived in August 2007.

Bruce Nash participated in a UC D “science and math concentration” doctoral laboratory meeting. As a result of this meeting, a number of joint NPS-UC D proposals were developed for NSTA 2008 and other professional meetings. UC D students and staff will plan and present work with NPS Views staff.

Bruce Nash provided input and review on a proposal submitted to the International Polar Year Project.

Bruce Nash provided input and review on a proposal submitted to the National Endowment for the Humanities.

Bruce Nash and other NPS personnel (WASO and IMR) met with UCD to discuss joint programs focusing on culturally responsible curricula and work UCD can do (in cooperative arrangements with NPS IMR) to improve diversity objectives of IMR (which could be expanded to national). Funding and future work is discussed between representatives from IMR and UCD and some work has been initiated.

Bruce Nash served as an initial liaison between IMR Interpretation and UCD on the Teacher-Ranger-Teacher Project. This stand-alone project, funded through the RM-CESU, is providing educational expertise to the IMR through teacher-ranger-teachers duty-stationed in national parks.

Bruce Nash and Kristen Lucke (UCD) designed and presented a 4-hour workshop for a UCD graduate-level course for science teachers. Bruce and Kristen presented Views, showed how parks use data to make decisions, and how teachers can use park data in Views for classroom exercises.

Kristen Lucke (UCD) used Views and other NPS materials to develop environmental science curricula for Castle Rock Elementary School (1st and 2nd grades).

Kristen Lucke (UCD) use Views and other NPS materials to assist Castle Rock elementary teachers developing curricula for their outdoor education program/camp at ROMO.

Views and UCD staff provided information to teachers at the “STEMapalooza” Conference in Denver (October 2008). Views products were available within the UCD exhibition booth, “hands-on” table, and alumni meeting. This effort will be expanded in 2009.

Bruce has served as a liaison between UC-D students and national park units. For example, students have conducted projects at MEVE following information provided by NPS. He also assisted in a field trip associated with the NSTA meeting in Boston, MA.

Both NPS Views staff and UCD staff developed and presented four different workshops on using Views in the classroom. These joint presentations were offered at the National Science Teachers Association Regional Meeting in Denver, CO (2007).

Both NPS Views staff and UCD staff provided information on the Views project and other joint ventures at the Denver Museum of Nature and Science (2007, 2008, 2009).

Both NPS Views staff and UCD staff together developed and presented a 1-day teacher workshop on using the Views program in the classroom. The workshop, presented twice in June 2009, was sponsored by the NSF-funded Rocky Mountain Middle School Math and Science Partnership (directed by UCD faculty and staff). The Views software was presented along with the educational resources developed by the NPS/UCD Views team.

Both NPS Views staff and UCD staff together developed and presented (in partnership with WASO-ARD, WASO-GRD, IMR, Views team, FLFO, ROMO, and retired NPS/BLM employees) a 2-week educational content course on earth science (July 2009). This course presented earth science concepts within an NPS framework. Twenty-five teachers attended the course.

Bruce Nash and Dr. Mike Marlow (UCD) have developed a 3-credit course on using national parks as subjects in virtual learning. This course was scheduled to be taught during the University of Colorado Denver School of Education Fall 2009 semester, but was cancelled due to decreased enrollment. The course may be taught during a future semester.

Bruce Nash has been appointed to the UCD Graduate Faculty (2009).

Availability

“Views of the National Parks” may be accessed at the Views website:

<http://www.nature.nps.gov/views/>

The entire program is also available on DVD.

Additional Information

Fact sheets for most Views modules are available from within the Views system (DVD or website). From the Views homepage (<http://www.nature.nps.gov/views/>), click on “Explore.” The next screen will have a banner across the top of the page. Click on “Information.” Pages four and five have links to pdf versions of the fact sheets. These 1-page (2-sided) color handouts provide information on the key features within each module.

Additional information may also be obtained by contacting:

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Literature Cited

Hansen, G., and Carlson, T. 2005. Wilderness education: The ultimate commitment to quality wilderness stewardship. *International Journal of Wilderness* 11(1):21-25, 34.