

Paper#: 5067  
Session Title: Fieldwork and Classwork  
Title: It's a Jungle Out There! Bring Fieldwork Back to Classrooms.  
Authors: Roger Palmer, Anita Palmer, Joseph Kerski Ph.D

### **Paper Abstract**

Costa Rica is an emerald gem set in the heart of Central America. This country, filled with beautiful tropical forests, amazing biological diversity, and dedication to environmental conservation, was the backdrop for a team of teachers who digitally mapped for the first time, the watershed, plant and animal life of the Selva Verde Private Reserve. During the experience, a group of teachers incorporated authentic field research and mapped the collected data using ArcView GIS, while exploring the tropical paradise that is Costa Rica. In this pioneering effort, the teachers generated invaluable data for use by many teacher and student groups both in Costa Rica and at home. This educator-created nine-day adventure was designed for educators to bring back techniques they learned and the data they gathered to the classroom. Their classrooms will never be the same again!

### **Paper Body**

Using GIS in the classroom can be a challenging task for any teacher. The hurdles while surmountable can prevent teachers from letting this technology gain a foothold in their curricula. GIS by its nature spans several skill sets from installing and managing spatial data, finding patterns in data to illustrate concepts, and designing curriculum around these concepts so that students best challenge their perceptions about the world. The teacher must be open to learning these skills, designing experiences that confront student misconceptions, leaving room for trying hypotheses, and leading students to easier conclusions by showing patterns more clearly than is possible with other technologies.

What is needed for this paradigm to change, to switch so radically to a way of teaching that is rarely accomplished yet valued in national standards and state benchmarks? This process can become a daunting task to teachers. Most teachers are well adept at explaining concepts, designing paper and pencil or discussion-based exercises. GISetc has designed workshops and institutes for educators interested in integrating geospatial technology skills into their classrooms. For the past five years the company has used geographically enticing places to model problem based learning as the backdrop for learning these skills.

This summer GISetc was interested in providing an extended authentic research experience while introducing teachers to the uses of GIS in the classroom. To this end, twenty-eight K-16 educators traveled to rural Costa Rica to participate in a summer institute housed at an eco-tourism lodge and community outreach center. These participants were exposed to a systematic introduction of ArcView if they had never used the software, and for those who had previous experience with the software, were provided a more "stretching" set of exercises. All participants worked together to understand the local biological reserve while developing informational assets for the community. They used basic ArcView to map and solve questions about factors affecting the ecological health of rainforests in the tropics. Both beginning and advanced users worked together to accomplish the goals of answering these questions and developing skills transferable to their daily teaching settings.

This method that has been used in the traditional GISetc summer institute model, has shown to be effective for several reasons. The dual track option where educators determine their interests and skill level requires considerable planning effort on the instructors' parts, but builds rapport among institute participants. Instructors can spend more time with beginning GIS users and also progress farther with participants adept at computer applications and GIS. Technology/GIS beginners follow a standard curriculum that is useable immediately in their classrooms until they feel comfortable with the ArcView interface. This type of setting allows the participants to experience a "learn at the pace they need" feel. Users wanting to explore the interface more intricately are challenged to look for other relationships in the data. They are taught to show data from different perspectives and to generate new relationships between data sets. All participants develop in their skills while retaining their respect as content experts. The mix of all levels of users working together, answering questions pertinent to the local settings creates a learning atmosphere where all can contribute.

Conducting GIS trainings in geographically interesting places has been an additional draw for participants to experience a new, exciting and exotic area of the world, but most importantly, to see that even local school yards and neighborhoods can be an equally engaging and important research tool for students. This combination truly creates the community of learners that will be the motivation to help educators acquire the technological activation energy needed to begin to see the real potential of ArcView GIS software as a curricular tool.

**Acknowledgements:**

Our thanks go to Holbrook Travel and the Sarapiquí Conservation Learning Center for their efforts on behalf of the Costa Rican rainforest, the barrios surrounding the Selva Verde Rainforest Preserve as well as the 28 teachers who participated in the institute.

Roger Palmer  
GISetc  
1409 S. Lamar #438  
Dallas, TX 75215  
214-533-8374  
214-428-0040  
redrog@aol.com

Anita Palmer  
GISetc  
1409 S. Lamar #438  
Dallas, TX 75215  
214-533-8376  
214-428-0040  
gisetc@aol.com

Joseph J. Kerski Ph.D.  
USGS  
Building 810 – Entrance  
W-5 – Denver Federal Center  
Box 25046-MS 507  
Denver, CO 80225-0046  
303-202-4315  
jjkerski@usgs.gov