Project Summary

Geologic Impact of Human-Induced Landscape Change -- Hands on data collection for High School Science Students

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Human hands have changed dramatically the New England landscape over the past 250 years. Just 100 years ago, much of now-forested New England was cleared of trees as agriculture, development, and energy requirements drove the rapid conversion of forest to farmland. The bare hills of Vermont eroded rapidly, sediment surged down hillslopes, and flooded the region’s rivers. Currently, geologic archives of this landscape response are being read by NSF CAREER grant-funded graduate and undergraduate students pursuing a variety of research projects at the University of Vermont. Now, we wish to work with high school students and explore another archive, one that preserves evidence of human-induced geologic processes at an instant of time.

In an educational program designed to involve high school students and their science teachers directly in active, on-going scientific research, we propose to build a digital archive of historic photographs. In particular, students across Vermont will compile photographs that show first hand, human impact on the New England landscape. Students will scour their own community and personal resources locating these photographs that show Vermont landscapes as they were in the past. Once such photographs have been located in the student’s homes, in the homes of older relatives, in local historical societies, and in local libraries, they will be brought to the student’s school and scanned using NSF funded equipment that will be loaned to each school for 6 to 8 weeks.

We plan that each student will select several photographs that clearly show human impact on the landscape. Using these photographs, each student will attempt to relocate the place from which the photo was taken. The site will be mapped using hand-held GPS and the scene rephotographed using a digital camera provided by our program. The final result will be a pair of photographs, new and old, georeferenced, and captioned by the student explaining the historic impact and the landscape response. As each class finishes its town, our state-wide data base, resident on the web, will grow. This will be a digital resource for people around the world -- including researchers in Vermont. The impact will be long-lasting in terms of both formal and informal science education.

Our program will involve high-school students, their teachers, University of Vermont science faculty, science staff, and the outreach coordinator for the Perkins Geology Museum at the University. Over the course of two years, University personnel will work intensively with students in 15 to 20 classrooms around the state. Teachers and students will continually share their findings on the web and in a final conference at the University. We view this as a pilot project that will begin to bridge the gap between University and high-school and between history and science. Our long-term goal is for our archive to include photographs from every town in the State of Vermont.