



UNIVERSITY of NEW HAMPSHIRE

The **Cyber-Infrastructure Digital Education and Research (CIDER)** project is funded under the National Science Foundation's (NSF) Cyberinfrastructure Training, Education, Advancement, and Mentoring for Our 21st Century Workforce (CI-TEAM) program. CIDER was funded as a *Demonstration Project*, defined by NSF as a project that will, "design, carry out and test the feasibility and effectiveness of preliminary, exploratory activities aimed at preparing a diverse science and engineering workforce with cyberinfrastructure knowledge and skills." As such, it inherently lacks the well-defined structure and linear direction of larger scale *Implementation* or *Diffusion* projects. From the perspective of our *teacher-participants*, this has meant that you have all been recruited into the project at different times, by different program staff, and likely, with slightly varying descriptions of CIDER. We feel that we are now at a point at which we can loosely define both our project goals, and our *teacher-participant* expectations. Moving forward, there are two key points to remember, however: 1) due to the nature and expectations of a Demonstration Project, our goals and activities will remain a moving target, as we recognize technical and curricular boundaries, and receive feedback from our *teacher-participants*, and 2) the role of the teacher-participant is defined by mutualism—while we hope to deliver valuable cyber-enabled tools and approaches, we are also dependent on your feedback, creativity and leadership.

Project Goals

Our focus is on capturing digital technologies as a means of helping people connect with, and learn about, their environment. Although CIDER activities will be *enabled* by cyberinfrastructure, they are also aimed at getting young people outdoors to use handheld devices as scientific research tools. Our project proposal defined our goals in three broad categories.

- 1) *Teaching Earth System Science*: We hope to build upon the foundation of those elements which we feel define quality Earth System Science (ESS)—authentic student research, a system perspective, and place-based, field-based experiences.
- 2) *Strengthening partnerships between scientists and the community*: The CIDER team has extensive experience in a variety of *Citizen Science* projects. Much of our current work exists in the boundary between *Citizen Science* and formal k-12 education. We continue to explore the best practices for strengthening student-scientist partnerships, particularly as this relates to enhancing students' opportunities to conduct authentic research. CIDER adds another element to this mix, as we explore novel approaches to integrating cyber-technology with this research.
- 3) *Creating an effective and adaptable CI resource for Earth System Science*: Perhaps the most dynamic of our goals, we hope to better define appropriate synergies readily available Web2.0 technologies, handheld cyber-tools (iPads and smart phones), k-12 curriculum expectations, and k-12 cyber-infrastructure and capacity.

Teacher-Participant Expectations

Perhaps the term *expectation* is too strong, but there are certain hallmarks of participation that we would like everyone to have, if possible.

- 1) *Picture Post integration*: Although CIDER is distinct from Picture Post, it is important that we leverage the capacities of each project to build a greater whole. Many of you are either recent, or long-term, Post Masters, and it is our hope that all *teacher-participants* will install a post, and explore new cyber-enabled approaches to integrating it into your curriculum.
- 2) *Exploratory use of iPads*: Although we intend to maintain a list of apps, as well as develop a couple of apps of our own, this aspect of the project will require a collective effort to help define this rapidly growing, and constantly changing, aspect of education. Our primary goal is to push the boundaries of handheld devices as uniquely transformative scientific research tools, rather than just small versions of a computer. As this still an area of rapid development and diffusion, we will be relying on regular, detailed feedback on all aspects of iPad (or other devices) use in your classroom.
- 3) *Exploratory use of Forum and Poster Session*: We are in the early developmental stage with two new communication tools. We will be adding a Forum section to Picture Post to enable interaction between users. We are also developing an electronic poster presentation, *Poster Session*, for students to communicate their results with their teacher, their peers, and beyond.