



Education: Schoolyard LTER

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<http://lternet.edu/education>
<http://schoolyard.lternet.edu>
<http://intranet.lternet.edu/committees/education/>

The screenshot shows the LTER website's 'Education' page. The header includes the LTER logo and 'The US Long Term Ecological Research Network'. The main content area is titled 'Education' and contains the following text:

Education is integral to the LTER Mission, and LTER has begun a broad-scale, long-term effort to create a scientific research and science education network.

The mission of LTER Education is to use the uniqueness of the LTER Network to promote learning about long-term ecological processes and the earth's ecosystems.

Goals include:

- Linking LTER research to advance public-school science learning for students
- Connecting long-term research sites on or near school yards
- Facilitating communication between LTER scientists, formal and informal science education and school teachers
- Promoting education in the field and in the classroom
- Fostering understanding of the earth's long-term ecological processes
- Promoting education, research and learning
- Encouraging interdisciplinary, collaborative research
- Integrating long-term and multi-national studies into school curricula
- Promoting a broad understanding of long-term ecological processes and the earth's

LTER CC (Jan 1998): Education Committee Charge

- ➔ * Develop program(s) for K-12 teacher advancement that involves a research experience component at LTER or similar sites (e.g., Biological Field Stations). The LTER Network is developing a collaboration with the Organization of Biological Field Stations - OBFS).
- * Develop a process for determining the needs of teachers that may be associated with LTER sites.
- ➔ * Facilitate development of School LTER programs that can serve as satellite sites for standardized measurements and experiments as well as collaboration with the LTER Network.
- * Develop interactions with other K-12 efforts in environmental education (e.g., GLOBE).
- * Develop programs on assessment and evaluation for K-12 and LTER interactions.
- * Facilitate the development of scientific tools and techniques for use by K-12 School LTER sites.
- ➔ * Facilitate the use of Internet and web sites to share School LTER data. This could involve help in developing school Web sites that target both teachers and students.
- * Develop funding efforts for K-12 teacher programs and school participation.
- * Develop publication materials (electronic and printed) on these LTER K-12 activities for outreach and promotion.
- * Promote/publicize the REU programs at LTER and OBFS sites, especially in regard to underrepresented groups.

SLTER History

- LTER CC Education Committee Charges (1998)
- Education Committee (formed 1997)
 - Activities
 - Oct 1998 Biosphere meeting (13 LTER sites)
 - Nov 1999 Kellogg meeting (13 LTER sites)
 - Mission Statement
- Schoolyard LTER Subgroup (formed 2000)
 - Activities
 - Recommendations

SLTER Activities

- Meetings & Presentations
 - Feb 2000 AAAS Poster
 - Aug 2000 LTER All-Scientist Workshops
 - Dec 2000 Subgroup Meeting at SDSC
 - Mar 2001 SDSC/NPACI Poster
 - Apr 2001 Report to LTER CC Committee
 - Recommendations (Handout)
 - Aug 2001 ESA Poster

Goals of SLTER Programs

The SLTER programs should promote and enhance opportunities for the K-12 school community to:

- Experience the nature of science with an emphasis on long-term ecological research (based on real-world science)
- Describe the local environment through observation, data collection, analysis and synthesis
- Interact with scientists to observe the research process, use of technology and communication of results
- Acquire an understanding of ecosystem diversity through linkages with a network of LTER sites
- Promote inquiry-based learning
- Explore the greater social context of science

SLTER Activities

- Site Programs
- Cross-Site (Network, Survey, Posters, Multimedia)

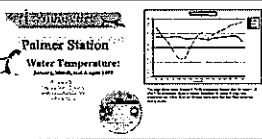
SLTER Site Activities

- Schoolyard Experiments*
- Classroom Visits
- Field Trips*
- Teacher workshops*
- On-line resources*
- Curriculum
- Linking with other programs*
- General Outreach Activities

Palmer Station, Antarctica LTER Education*

Education Outreach program at the Palmer Station (PAL) LTER site in Antarctica fosters partnerships among classroom teachers, research scientists, information managers, and education by establishing ties with ongoing programs. Palmer participants facilitate teachers' field experiences with inquiry based science.

The Teachers Experiencing the Arctic and Antarctica (TEA) Program is funded by NSF-ES&HER and OPI. TEA teacher participants include high school teachers Beate Dawson (1998), Mimi Wallace (1999) and Bill Swanson (2000).

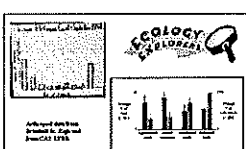


<p>Students use online field data:</p> <ul style="list-style-type: none"> > Air and water column temperature > Biomass and nutrients > Killi abundances > Adelle penguin populations 	<p>Web site includes:</p> <ul style="list-style-type: none"> > Research-Education Overview > Field Communications > On-line journals > http://tea.lce.edu > http://www.lceas.ucsb.edu/education 	<p>Teacher support includes:</p> <ul style="list-style-type: none"> > Summer Internships > Education Outreach Trunk > Digital archive > Field Team participation > Co-going collaborations > Scientist classroom visits
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Central Arizona-Phoenix LTER Education*

The CAP LTER education outreach program, called Ecology Explorers, links K-12 students and teachers to CAP LTER scientists and research projects. Students and teachers collect data in their schoolyards or backyards to study the effect of urbanization on the Phoenix ecosystem. This contributes to science literacy in the schools and to the long-term monitoring of our desert city.

The program is coordinated by CAP LTER education personnel and participation has grown to over 30 schools since it started in 1998.



<p>Students collect schoolyard/backyard data about:</p> <ul style="list-style-type: none"> > Bird Populations > Ground Arthropod Populations > Insect Benthic Populations > Plant Diversity > Biogeochemical cycles & microclimate (new this year) 	<p>Web site includes:</p> <ul style="list-style-type: none"> > Protocols > On-line database (entry & retrieval forms) > Lesson plans > Meet the scientist > http://caplter.asu.edu/explorers 	<p>Teacher support includes:</p> <ul style="list-style-type: none"> > Summer Internships > School-year workshops > Scientist classroom visits > Curriculum Resources > Biannual Teacher Meetings
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SLTER Cross-site Activity

- Survey
 - On-line survey to find more information about SLTER
 - 9 sites responded (CAP, GWT, GCE, HBR, HFR, JOR, NTL, PAL, WDR)
 - People involved (per year)
 - 40 to 60 LTER PIs, post-docs, and staff
 - 40 LTER undergrads & grads
 - >100 teachers
 - >2000 students
 - Funding
 - Supplement
 - Local, GK-12, USDA
- Web Page
 - Resume for Teachers & Kids
 - LTER site information (biome module)
 - LTER data (basic ecological concepts)
- Multimedia Technology
 - Web cam
 - Slide sets

SLTER Project: Biome Module

- Teacher's Page
 - Each LTER site
 - Pictures
 - Data from 5 core research areas
 - Graph form
 - Similarities & differences
 - Interviews/scientist
 - Ideas for classroom activities
- Kid's Page
 - Activity w/ organisms
 - Which biome would it live in?
 - Information & data dependent on grade level of student
 - Goal to understand adaptations & environment
 - Activity will meet Life Science Content Standards

Feedback on SLTER



"Teachers report that the SLTER approach provides students with numerous opportunities for open-ended investigation; inquiry-based learning that is iterative in nature, actually mimics scientific research, and engages students with 'big ideas' in ecology such as biodiversity, global change, ecosystem service"—NTL LTER

- SLTER Programs meet state and national science standards and promotes education reform
- Teachers & kids benefit from interaction with "real" scientists
- Scientist benefit from interaction with the public/teachers & kids
- Ecology is presented by practicing ecologists

SLTER Future



- Continue LTER Coordination via Subcommittee
- Pursue Funding Opportunities
- Promote Partnerships
 - Scientist-Educator-Information manager
 - National partnerships (NSTA, SDSC/NPACI, TEA, DLESE)
- Develop Projects
 - NSTA publication
 - Biome Module
 - Address dataset availability

I want students to realize that science doesn't always require a PhD and lots of expensive equipment. Any careful observer with a little training can answer many important questions in science. Many people find science to be mystical and remote from their daily life. I hope that students will realize that they can walk out their front door and start making scientific observations. Ecological interactions don't just take place in wilderness areas but they are all around us. I think it will give students a better understanding if they can observe our local ecosystem and think about their interactions with the environment.

---Dr. Tim Craig

