3 Education and the Development of Human Capital

Education Vision

The LTER Network envisions a society in which knowledge based on ecological research is foundational to the education of all citizens and contributes to the development of informed management and decision-making.

Mission

The educational mission of the LTER Network is to provide the scientific community, policy makers, and society with the knowledge and predictive understanding necessary to conserve, protect, and manage the nation's ecosystems, their biodiversity, and the services they provide.

Situational Analysis

Strengths and Opportunities include:

- A long history of interdisciplinary work on environmental issues.
- A network of research communities linked to one another and to educational systems through personal contacts and information technologies.
- Place-based, long-term, spatially distributed monitoring and observational programs, experiments, data sets, and resources for acquiring data.
- Strong site-based K-12 educational outreach along with undergraduate and graduate education and mentoring programs.
- Strong site-based initiative to leverage scarce resources in support of goals and constituent groups.
- Individuals with vast experience ready to lend their leadership skills.

Challenges include:

- Limited connection between sites or the Network and community colleges, independent schools, and Citizen Science programs.
- Few systematic programs to prepare students for cross-site or interdisciplinary work.
• Lack of Network-wide coordination and communication among site-based education programs.

• Lack of Network-wide cyberinfrastructure support for cooperation among site-based affiliates and partners.

• Few existing cross-site projects and lack of resources necessary to replicate or expand them across the Network.

• Limited engagement of under-represented groups at all levels.

Goals and Objectives

Goal 1. Develop Network-wide leadership, organization, and cyberinfrastructure to support education and outreach programs at individual sites and to influence education standards and assessment at state and national levels.

• Coordinate activities led by education coordinators at individual LTER sites in relation to cross-site, regional education and outreach programs.

• Develop Citizen Science programming and initiatives through collaborative relationships with existing Citizen Science programs, supporting the development of novel protocols, engaging citizen groups, and organizing opportunities for sharing best-practices, data exchange, and collaboration.

• Coordinate regular Network-wide program evaluation and targeted self-studies to promote LTER education efforts in regional and national conferences and arenas.

• Work with LTER scientists, education researchers, constituent groups, education administrators, and cyberinfrastructure and other technical experts to develop cyberinfrastructure that will support cross-site collaboration in education research and programs; serve as an active repository for teaching and assessment resources; and enable Network-wide program evaluation

Goal 2. Conduct research and develop shared goals and programs for human development and education in environmental science literacy for students and citizens that includes learning from diverse people and perspectives within LTER communities.

• Develop materials that support teachers in the classroom and in the field.

• Enable teachers to communicate with one another as well as assess their students’ understanding of local environmental issues.
• Develop a Network-wide educational research and development program organized around learning progressions in key dimensions of environmental literacy.

• Facilitate communication between and among actors along diverse axis – political, socioeconomic, ethnic and cultural, age, and gender.

• Develop new site-based and Network-wide programs that coordinate the diversity and training efforts currently in place at sites across the Network.

**Goal 3.** Develop programs for working with key constituent groups including K-12 teachers and administrators; undergraduate students, graduate students, and professors; policy makers; and engaged citizens.

• Focus on professional development for teachers to give them the knowledge and skills they need to take advantage of LTER resources.

• Support local schools by creating opportunities for teachers to work directly with LTER scientists.

• Enable cyberinfrastructure support for individual sites so they can organize local collaborative efforts in tandem with Network-wide efforts to influence standards and assessments at the national level.

• Position LTER scientists and educators to serve on policy-making boards and assessment development committees in states and local school districts.

• Engage students in scientific inquiry that includes an interdisciplinary approach to understanding global issues.

• Foster near-peer mentoring, promote collaboration in undergraduate research, integrate curricula across biophysical and social science disciplines, and broaden the LTER definition of ecological science career pathways.

• Increase the numbers of graduate students engaged in interdisciplinary research by broadening spatial and temporal perspectives.

• Foster a participatory and inclusive process in which citizens become active in data collection and communicate with researchers and policy makers.

• Connect LTER research and education programs with existing relevant Citizen Science programs and support the development of protocols that grow out of specific site needs.
- Develop and share best practices in communicating the results of Citizen Science to decision-makers.

- Support local LTER sites in their efforts to provide local decision makers with relevant environmental information and to promote environmental literacy in citizens.

Strategies

- Work with administrators and policymakers to influence school curricula and assessments.

- Place LTER scientists and educators on key committees.

- Provide quality resources for standards and assessments.

- Support professional development for teachers.

- Disseminate instructional materials and assessments that will help teachers develop environmental science literacy in their students.

- Support development of resources that enable professors, including LTER scientists, to develop environmental science literacy in all of the students they teach.

- Sponsor programs that enable graduate students to communicate across sites and prepare them for careers in interdisciplinary research.

- Introduce minority students to ecological research and seek to recruit diverse students into careers in environmental science.

- Promote engagement of local citizens in Citizen Science activities that enable scientists and educators to benefit from the local knowledge of citizens.

- Allow citizens to learn about and participate in environmental science research, and provide data.

- Provide information and education for citizens who are in decision-making roles.

Implementation Plan

Metrics (Productivity, Outcome)
Financial Resources

Management Plan