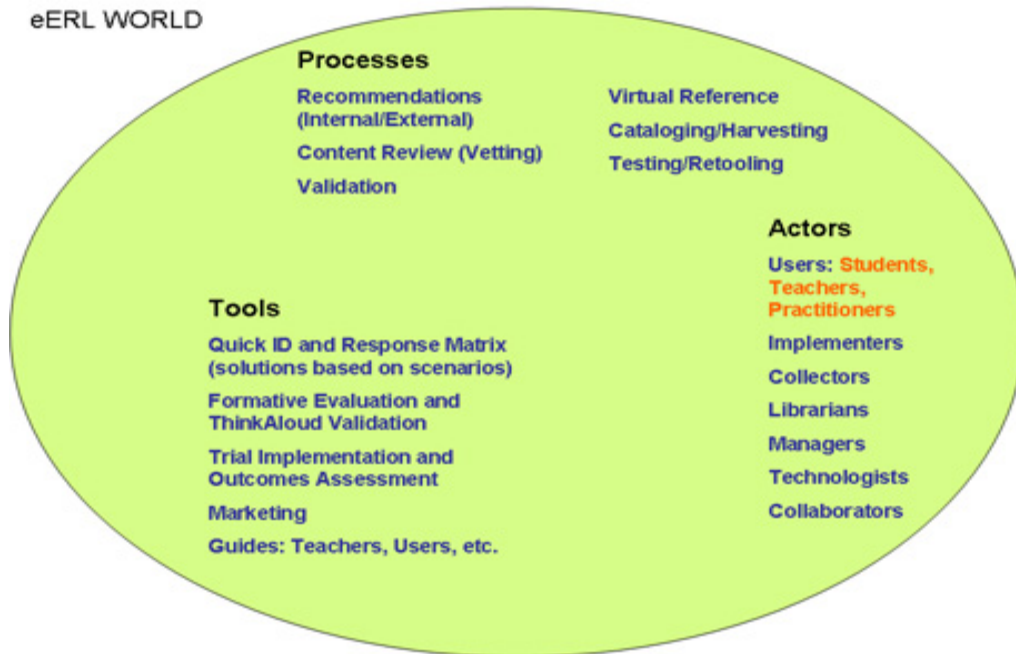


Conclusion: Towards Sustainability

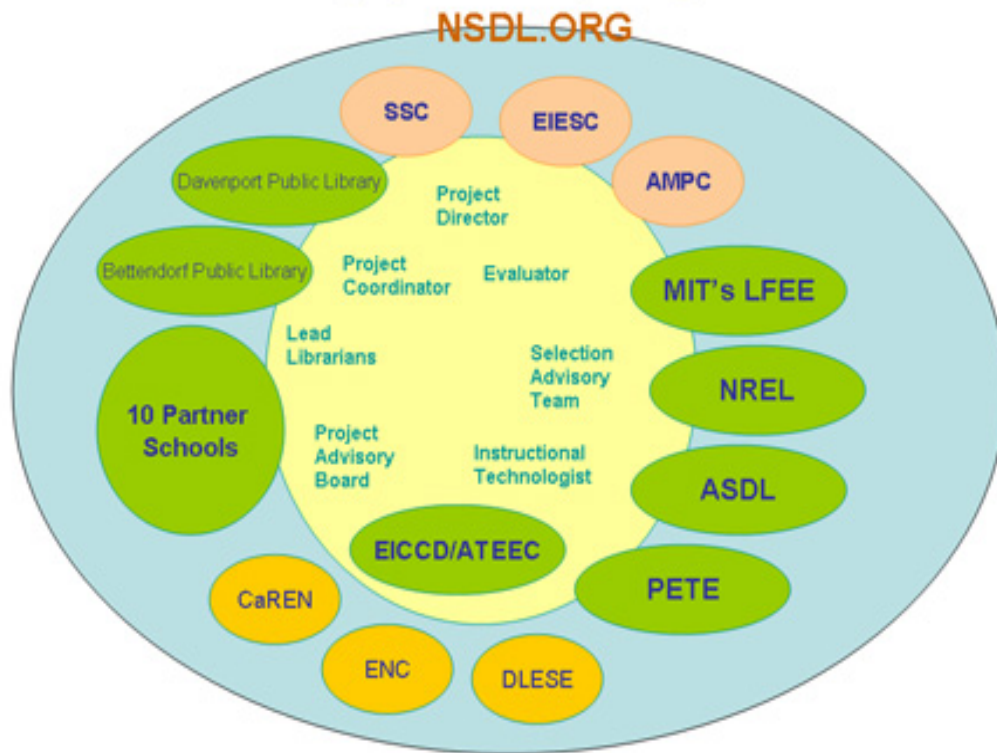
When all the elements of eERL were in place, and the efforts of the project manager/coordinator, librarians, instructional technologist, collaborators, collectors, evaluator, and implementers were brought to fruition, a new digital library community took form. It looked something like this:



The eERL community—at its best—is a dynamic blend of Actors, Tools, and Processes. The Actors use the Tools to perform the Processes.

The current eERL team envisions what the next version of eERL will become, based in part on their Lessons Learned. Two and a half years of participation in the NSDL community (<http://www.ateec.org/pete/>) and experience in the development of eERL have positioned the eERL team to fulfill a larger vision tied to a new reality of community and collaboration. The active participation of the team in evaluation has provided valuable feedback to develop eERL to the next level. The new eERL world would look something like this:

The Greater Universe: Keeping eERL Healthy through Collaboration



The new features of the expanded, healthier eERL community and its goals include:

1. Expand the resource base of the library and evaluate its functionality and value.

The eERL Project Coordinator and librarians have repeatedly fielded requests from eERL users to expand the library collection to include sustainable energy practices. This rapidly growing advanced technology environmental education area requires considerable knowledge of science, technology, engineering, and mathematics (STEM). Sustainable energy and related technologies include biomass, construction (green building), energy assessment, fuel cells (hydrogen), solar (e.g., passive, active, solar thermal, photovoltaic), wind, geothermal, and hydroelectric. While the demand for the knowledge and practice of sustainable energy is at an all time high, many current educators and practitioners have little background or experience in these areas. eERL will become a significant resource in bridging this knowledge gap. In doing so, eERL will focus on a target audience of community college educators engaged in environmental technology education and in the teaching of a variety of occupational technologies that require knowledge of sustainable energy's many related topics (i.e., building trades; heating, air conditioning, ventilation; transportation; and agriculture).

“Resources on eERL for sustainable energy would be a great benefit. I hate to just turn students loose and hope they find something. With eERL I would be more inclined to have them explore more than what is in the book.”

*Jeff Newmeister,
eERL user – High
School Instructor*

Project partners MIT's LFEE [<http://lfee.mit.edu>] and NREL [<http://www.nrel.gov/>] have particular strengths in the sustainable energy content area and will make an immense contribution to resource collection efforts and to the integration of research and education. During the initial grant, an explicit collection policy (<http://www.eerl.org/SPT--eerl01--collpolicy.php>) and selection criteria tied to eERL's goals and constituencies were created. The selection criteria include: authority; scope and audience; accuracy and balance; legality; and design and function.

The Grassroots Contributor Network is being established to solicit new resources for the eERL library from three primary groups – the Partner Schools, environmental organizations/agencies, and eERL users, which potentially includes educators and librarians from 1200 community colleges in the PETE/ATEEC/AACC network. The participating educators and librarians from the ten Partner Schools have a specific charge to contribute resources and to assist the Project Staff in vetting (juring) those resources. Thus the contribution of new, quality resources is a major responsibility of these Partner Schools. Using the extensive networks of ATEEC (<http://www.ateec.org>) and PETE (<http://www.ateec.org/pete/>) and AACC (<http://www.aacc.nche.edu/>), environmental organizations/agencies will be contacted and a liaison person identified to contribute unique resources to eERL. Additionally, eERL users (developing users from the 1200 community colleges in the network) will be solicited to submit resources to the eERL resource collection.

All resources submitted from any of these sources will be vetted (juried) through the Lead Librarian, Selection Advisory Team, and Partner School personnel before they are incorporated into the eERL collection. The activities outlined for this objective will ensure a more comprehensive collection of resources and by involving a wide range of organizations in the creation of eERL, will serve as a means to market and disseminate information about eERL to these organizations. In effect, these activities will contribute to the sustainability of eERL.

2. Enhance the infrastructure of the emerging eERL library so that it offers an innovative, service rich, interactive environmental digital library.

Based on the experience of the library staff and feedback from eERL pilot users, the eERL library will be significantly

enhanced by offering an e-Reference service. Digital libraries are in an early stage of development, and users of this new resource, at times, require personalized support services. The e-Reference service will include: responses to users' emails about questions on the use and/or content of eERL, online assistance in structuring search language, a Frequently Asked Questions (FAQ) file, and contact information for specialized organizations or experts in the field.

An e-Reference service not only provides information and referrals, it is one of the keys in the transformation of digital libraries from sterile collections of materials to places with a sense of community and human interaction.

The strength of this plan is collaborating with the ten librarians at the Partner Schools. When a question is to be fielded, it will come to the Lead eERL Librarian and can be quickly sent to one of the ten partner schools' librarians. This process will be efficient and will provide a responsive environment. These services will be available to students, faculty, and practitioners. An interactive e-Reference service staffed by professional reference librarians is perhaps more vital to an on-line digital library than it is to a traditional bricks and mortar library. This service facilitates the accessibility of STEM resources collected by eERL.

A basic concern in the development of eERL, as with many new products or services, is consumer usability. An important component in the evaluation of eERL is whether patrons find its use “intuitive” and “friendly.” User input into the design of eERL is critical to ensure that the site works the way the user expects it to work and to ensure that a person of average ability with web resources can use the library for its intended purpose without experiencing great difficulties or frustrations.

The MIT Usability Group has developed protocols for such usability testing. The following elements of a site are typically tested; navigation, functionality, user control, language and content, online help and user guides, system and user feedback, web accessibility, consistency, error prevention and correction, and architectural and visual clarity. The testing process will incorporate the following elements:

- real user participants performing tasks that probe the usability of the site
- participants think out loud as they work
- stakeholders and developers observe the testing process
- testing behavior and preferences are recorded, and
- usability problems are diagnosed and improvements are recommended.

Through this usability testing MIT will assist EICCD/ATEEC in constructing the eERL site so that it accommodates human factors and incorporates sound usability principles.

ATEEC (<http://www.ateec.org>), an ATE Center within EICCD, will be responsible to implement this project. ATEEC operates under the policies and direction of EICCD (<http://www.eicc.edu/district/about.html>) and is guided in its programmatic efforts by a National Visitation Team composed of environmental technology faculty, business and industry, professional society, and governmental agency members from across the country. To maximize eERL’s content, accessibility and impact, ATEEC has enlisted the participation of key partners. MIT’s LfEE, PETE (<http://www.ateec.org/pete/>), NREL, and the DPL (<http://www.davenportlibrary.com/>) are each committed to carrying out specific activities as detailed in previous sections of this application.

Project Advisory Board will provide overall project oversight, guidance, and direction. The Board has provided key input into the content of this application.

Selection Advisory Team members will be identified to work with librarians to supervise, guide, and build the collection. The members are experts in these areas and will receive an honorarium for providing leadership in identifying and surveying library content and developing a collection of juried resources for a Teacher’s Guide.

Partners Schools will: serve as content experts to jury eERL submissions; implement and test eERL based classroom activities; form the core of the Contributor Network; participate in evaluation of eERL; carryout e-Reference duties; and assist in marketing eERL.

So we have looked at what the first iteration of eERL is and a vision of what eERL can become. Currently eERL is being sustained because of ATEEC and its commitment. A librarian is maintaining the site by keeping the URLs current and the site viable. The next section explains how ATEEC is able to sustain eERL.

Sustainability through Collaboration and Diversification

ATEEC is the lead partner in many collaborations, a major key to sustainability. ATEEC's mission is to advance environmental technology education through curriculum development, professional development, and program improvement in the nation's community colleges and secondary schools. The Center's vision has been to create a national network of community colleges, supported through public and private partnerships, that prepares and maintains an environmental technology workforce to address industry's needs and to promote the transfer of secondary students to higher education. ATEEC's primary partners include the Partnership for Environmental Technology Education (PETE) and the University of Northern Iowa's Center for Energy and Environmental Education.

"eERL plays a vital role in the NSDL community. Their active networking with community colleges and the workforce will be instrumental in growing NSDL."

Rachael Bower
Co-Director, Internet
Scout Project

ATEEC has created a diversified funding portfolio securing more than \$12 million over the last 11 years. Some of these funding sources include the U.S. EPA, the U.S. Department of Labor, the University of Wisconsin, the U.S. Department of Energy, the U.S. Department of Education, the Institute for Museum and Library Services, the Massachusetts Institute of Technology (MIT), the National Renewable Energy Laboratory (NREL), and the private sector.

ATEEC and its partners have recently developed products in the area of energy including Energy Services Careers (a 27-page booklet that defines occupational areas, job titles, and job functions in the energy services career field), Best Practices for Planning an Energy Services and Technology Curriculum Guide (CD-ROM), energy services and technology model curriculum (recommended courses for one-year certificate and two-year associate degree programs), a technician education digital library including energy efficiency/renewable energy and sustainable/green building practices, and learning modules in the area of energy for use in elementary classrooms and museums.

To diversify its funding structure, ATEEC uses its expertise in instructional design to contract with the private sector. ATEEC has developed customized learning resources for companies such as Sentry Insurance, Safety Kleen, and Kar Products.

ATEEC, implementer of the eERL digital library project, operates under the policies and direction of EICCD (Eastern Iowa Community College District) and is guided in its programmatic efforts by a National Visitation Team composed of members representing environmental technology faculty, business and industry, professional societies, and governmental agencies.

To maximize eERL's content, accessibility and impact, ATEEC has enlisted the participation of key partners to assist in the collaboration and strengthening of its relationships with others. These key partners include MIT's Laboratory for Energy and the Environment (<http://lfee.mit.edu/>), Analytical Sciences Digital Library (<http://www.asdlib.org/>), PETE (<http://www.ateec.org/pete/>), National Renewable Energy Laboratory (<http://www.nrel.gov/>), the Davenport Public Library (<http://www.davenportlibrary.com/>), and the Bettendorf Public Library (<http://www.bettendorflibrary.com/>) are each committed to carrying out specific activities as detailed in previous sections of this application.

Sustainability through the Passion to Provide Quality Education

Community colleges are an American invention allowing students to access higher education at close-to-home facilities. The nation's 1,200 community colleges, serving 10.4 million students, provide a variety of educational opportunities including: credit transfer, vocational/technical degrees, short-term retraining, basic and developmental education, continuing/adult education and a variety of services to local business and industry. As noted, the Eastern Iowa Community College District (EICCD) and ATEEC have assumed a leadership role in environmental technology education for over 20 years. ATEEC, designed to promote and strengthen environmental education and technician training programs at the nation's community colleges, has a passion to create learning materials and professional development opportunities for environmental educators.

ATEEC has a staff of ten, including three instructional designers and an instructional technologist, devoted to the creation of environmental science and technology resources and to making the community college experience in environmental science and technology a quality one. The personnel at ATEEC are forward thinking and proactively seek new ways to develop resources. The staff is not large but is determined to carry out its mission.

eERL and ATEEC seek to know where students are "at" and give them a reason to stay focused on technology education even though their goals may or may not include attending a formal, 4-year college. It is a practical approach for some students to fit smoothly into the environmental technology workforce. It is a stepping stone for other students to continue in the educational path. ATEEC educational resources, including eERL, are flexible and adaptable to the needs of the students.

The extensive coordination and planning that has gone into development of eERL's project design helps ensure the efficiency and value of the library. This project will have a direct impact on hundreds of environmental education technician instructors (primary audience) and, as a result, on thousands of students and practitioners. Additionally, eERL, working with the NSF-ATE program, is well positioned to serve as a model to encourage the development of a range of (STEM) digital libraries to serve learners in all fields of technical education.

Three themes emerge from this conclusion: 1) eERL and ATEEC make very good and extensive use of community, 2) eERL will be sustained because of ATEEC's collaborative nature and participation in community. This community structure serves as a valuable model, and 3) the eERL team, as does ATEEC, seeks to use evaluation to improve and sincerely listens to its users. This evaluative component will continue to be part of eERL and ATEEC's structure, which will ensure that growth will also mean improvement in serving users. .