

NAGT/SERC Geoscience Education Infrastructure Meeting Synthesis Report



Final report from the Geoscience Education Infrastructure Planning Meeting
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Report prepared by the Science Education Resource Center
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Executive Summary

For nearly two decades, the Science Education Resource Center (SERC) has, through partnerships with NAGT and across the broader geoscience education community, developed an infrastructure that supports the community in improving geoscience education. The infrastructure includes both a technical platform (Serckit) and a complementary suite of practices spanning from project management to community engagement.

The work of the geoscience education community is deeply intertwined with, and impacted by, the infrastructure for website development, professional development, project management, and research and evaluation offered by NAGT and SERC. This infrastructure reflects evolution driven by collaboration with more than 150 projects in the past 18 years.

In November 2019, SERC and NAGT convened a meeting to provide an opportunity to step back and reflect on how the complete suite of tools and processes might be advanced in ways that capitalize on potential synergies and efficiencies, and better serve all members of the community. Specific attention was given to supporting geoscience education research, serving the geoscience education needs of minority-serving institutions, and broadly supporting diversity, equity, and inclusion across geoscience education.

Over the course of the meeting, participants identified infrastructure challenges and strengths of the current NAGT/SERC infrastructure, and then assembled a list of six priority recommendations that were deemed critical to the infrastructure's capacity to facilitate community-wide learning, support individual and project success, and enable community-scale action.

Priority Recommendations

- ❖ Improve resource discoverability
- ❖ Improve connections to other education and research partners, and develop a strategy for partnerships that increase resource completeness and impact
- ❖ Expand resources and services that support geoscience education research (GER)
- ❖ Improve capacity for finding people through Teach the Earth
- ❖ Improve the infrastructure in ways that allow for shepherding the collection
- ❖ Clarify the vision, audience, and description for the Teach the Earth portal, infrastructure services, and SERC office

An explanation for why each priority is valuable and a list of prioritized strategies accompany each recommendation. This set of six community priority recommendations will guide the future infrastructure development for both NAGT and SERC. Addressing these recommendations will require community-wide engagement. So we hope this report can serve as a guidepost for all those in the community involved in providing the infrastructure that supports the advancement of geoscience education.



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Introduction

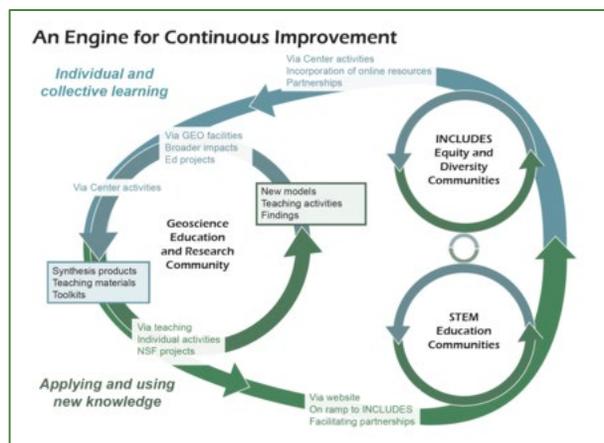
In November of 2019 a [group of 40 individuals](#) representing a broad range of perspectives was brought together for a 3-day workshop focused on Geoscience Education Infrastructure.

They were charged with exploring the ways in which community infrastructure supports the advancement of geoscience education and to develop a set of recommendations for future infrastructure needs. They engaged in a series of small group discussions and synthesis activities with a particular focus on the infrastructure provided to the community by the Science Education Resource Center (SERC) and National Association of Geoscience Teachers (NAGT). This report reflects those discussions and highlights a set of consensus recommendations.



Why Infrastructure?

The workshop's opening presentation from Sharon Mosher reflected on the outcomes of previous work exploring community needs in geoscience education such as the Future of Undergraduate Geoscience Summit ([Mosher et al., 2014](#)¹). This presentation and subsequent group discussion highlighted a need for systemic culture change in Geoscience Education to address the challenges facing the community including: helping students develop the competencies employers need, engaging the full community of learners in deep geoscience understanding, and capitalizing on the potential of the Next Generation Science Standards (NGSS). These culture changes will require broad engagement across departments and programs, faculty and administrators, students, employers and professional societies. Community infrastructure (tools and processes that provide shared platforms and venues) can serve as accelerators for this sort of systemic change. Shared online repositories, from teaching activities to program design, can help promulgate best practices. Regular community meetings and facilitated events can act as pipelines connecting people and ideas around shared challenges. Shared community infrastructure is an important focus for advancing community-wide challenges.



¹ Mosher, Sharon; Bralower, Tim; Huntoon, Jacqueline; Lea, Peter; McConnell, David; Miller, Kate; Ryan, Jeffrey G.; Summa, Lori; Villalobos, Joshua; and White, Lisa, "Future of Undergraduate Geoscience Education: Summary Report for Summit on Future of Undergraduate Geoscience Education" (2014). School of Geosciences Faculty and Staff Publications. 1127. https://scholarcommons.usf.edu/geo_facpub/1127

Goals of the Infrastructure

The goals of the NAGT and SERC geoscience education infrastructure are to:

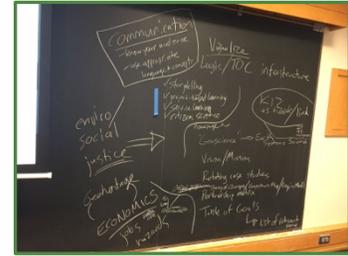
- ❖ Facilitate Community-Wide Learning
- ❖ Support Individual and Project Success
- ❖ Enable Community Scale Action

Infrastructure Challenges

Workshop participants identified seven important challenges for improving the infrastructure and its impact:

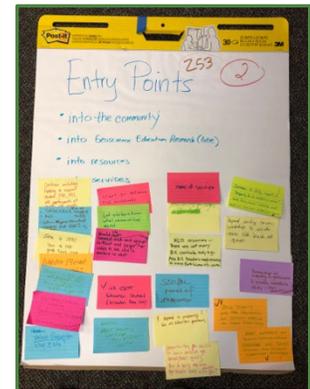
Building Capacity for Using the Infrastructure

There is great potential and need to offer faculty, student (K-18), and adjunct communities capacity building opportunities and resources in diversity, equity, and inclusion, geoscience education research (GER), instructional practices, and offering them project services. There is a need to provide differentiated support for these communities in all of these activities. The ability to succeed in this challenge will depend on partnering with other large organizations and university leadership (e.g. ADVANCE and CIRT). And yet, there is a caution to not let SERC get too big because it is unlikely all these things can be done well.



Creating Inviting Entry Points to Online Resources

The current geoscience infrastructure is rich with resources, and yet because there is so much content, it can be overwhelming for people encountering the website and programming, especially for the first time. The SERC and NAGT websites, in particular, are difficult to navigate for novices who do not know how to find the information that they seek. A separate but related problem is that many members of the geoscience community are completely unaware that these resources exist. For some, they may be confused by whether they fit into the "geosciences." For others, they perhaps have never heard about NAGT and SERC or do not know the full scope of their work, and therefore do not even know to look. We need an infrastructure that is rich yet accessible to newcomers, with ample opportunities for on-ramps to what will help them succeed in their work.



Addressing Students' Needs Beyond the Traditional Classroom

Traditional classroom experiences don't necessarily bring students onto a clear pathway into the geosciences or leverage the significant student energy and interest in Earth issues. Students need experiences that incorporate their traditional academic learning into more holistic and personally meaningful engagement with the discipline - whether they are a major or an intro student in their only geoscience course.

Creating Connections

Recognizing the valuable resources that already exist, we need to develop robust connections between resources outside of NAGT and SERC, and resources within NAGT and SERC. What are the infrastructure pieces that help to build connections? We need to define: what is core to SERC? Once this is outlined, these connections can be built.

Valuing Data - Improving or Creating Repositories

The existing collection of teaching materials is very broad but uneven as it arose organically from the collective work of many projects. Lack of overall curation makes it challenging for users to find the materials most valuable to them. In contrast, there is a dearth of shared resources to support geoscience education research needs. Needs include validated data on research instruments, shared understanding of best practices and any sort of centralized data repository that could support community-wide projects and individual investigator efforts.

Inclusivity and Accessibility

The cyber landscapes that connect the overall educational ecosystem (higher ed, schools, parks, museums, ...educators, users) have insufficient breadth, inclusivity, and accessibility to meet the full range of user needs. The NAGT/SERC infrastructure needs deeper connections to allied national efforts and intentional design efforts to serve the full range of user abilities and experiences.

Improving and Communicating Focus and Strategy

As a result of the evolution of the current NAGT/SERC cyberinfrastructure and resource portal from the work of projects, the users perceive a lack of clarity regarding the mission, vision, goals, audience, and strategy of the infrastructure. This context for the infrastructure and resources needs to be developed more fully and communicated. It could then serve as a resource to enhance marketing and communication efforts as well as to enable inclusion, collaboration and growth.

Strengths of Current NAGT/SERC Infrastructure

Workshop participants spoke to a number of strengths of the current geoscience education infrastructure provided by SERC and NAGT. The online collections of teaching materials developed by the community through individual and project-driven contributions play a key role in supporting the day-to-day work of many geoscience educators. The community values the peer review system for teaching activities as it supports them in identifying high quality materials and gives credit to authors for their contributions. The ongoing series of professional development events, and especially the Earth Educator's Rendezvous, serve an important role in connecting community members. An ongoing partnership with the historically black college and university (HBCU) community serves as a model for mutually beneficial and equitable collaborations. The recent growth of the geoscience education research community is another example of successful community collaboration fostered through the infrastructure. The community also highly values the expert support and scaffolding the infrastructure can provide to new projects giving them access to evaluation expertise and web publishing capabilities that embody the learning from past community efforts. Across all these elements a core strength is that the infrastructure is by the community, for the community.



Priority Recommendations

Six recommendations were prioritized as the most critical to improving the infrastructure's capacity to facilitate community-wide learning, support individual and project success, and enable community-scale

action. For each priority recommendation, the priority strategies represent the top five as voted on by workshop participants. Additional priority strategies for the six priority recommendations are available in Appendix A. Other recommendations for infrastructure are provided in Appendix B, and other strategies to widen the use of infrastructure are provided in Appendix C.

1. Improve resource discoverability

Why this is valuable?

Discovery of resources within the collection is a primary, if not the primary, feature for most users of SERC. How can SERC give its users the best experience possible to get to all the resources that SERC has? Answering this question and solving this challenge can help to attract and support new users. Those that are not already involved with SERC don't have the background to know what SERC can do. Improvements to discoverability involve two levels of discovery: finding SERC and NAGT overall in the context of a need (e.g. search engine optimization and marketing), and universal search over all content made available by SERC and NAGT that allows for refinement by natural language and other techniques. Improvements also involve identifying how current users find resources, scaffolding the new user experience, and helping users make use of what they have found. Improved user interface and design will help to attract new users and enhance the discovery process.



Priority strategies:

- ❖ Redesign user experience based on modern expectations and aesthetic
- ❖ Create a help forum or other tool for answering specific questions or seeking resources for specific purposes
- ❖ Provide on-ramps for new users with no assumptions of background including professional development experiences and videos
- ❖ Develop simultaneous searching of different categories
- ❖ Develop user interfaces for specific groups and purposes



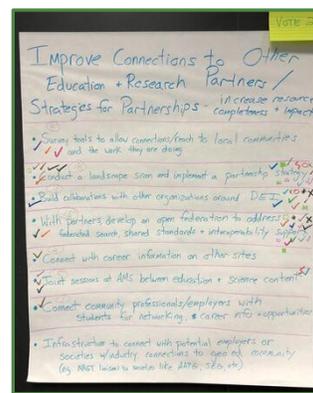
2. Improve connections to other education and research partners, and develop a strategy for partnerships that increase resource completeness and impact

Why this is valuable?

Improving connections to partners and developing a strategy for impactful partnerships can enable the infrastructure to become more inclusive, expand networks of practice, and improve existing and emerging

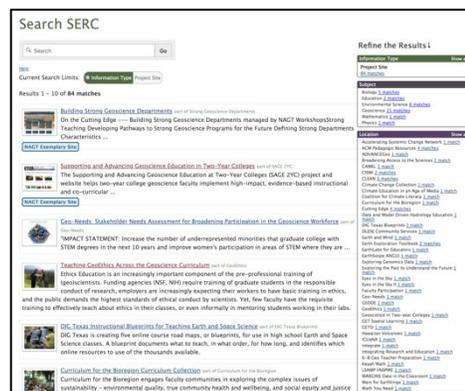


educations resources. A landscape scan is necessary to help establish areas of expertise in research and practice in other organizations, which will help organizations determine roles relative to each other and how they can synergistically work together (i.e. the Collective Impact Model). There is also a need to reduce duplication of efforts and leverage expertise and resources to community action at scale. Improved connections to partners will broaden the reach of SERC and NAGT to a greater community of professionals in other professional societies and industry, and will enable growth and collaboration within small groups where the infrastructure is underutilized.



Priority strategies:

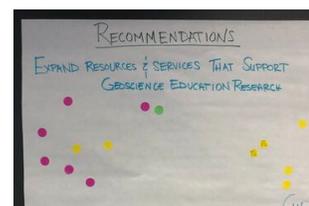
- ❖ Conduct a landscape scan and implement a partnership strategy with current and future partners
- ❖ Develop an open federation with partners to address federated search, shared standards, and other issues supporting interoperability
- ❖ Build collaborations and connections with other organizations around diversity, equity, and inclusion (apply to AAA for SEA Change)
- ❖ Conduct joint sessions at American Meteorological Society Annual Meeting and Ocean Sciences Meeting between education and science content
- ❖ Develop survey tools to allow connections/reach to local communities and the work that they are doing so that their resources can be leveraged in ways that honor and further their work and could lead to collaborations



3. Expand resources and services that support geoscience education research (GER)

Why this is valuable?

We know that a lack of effective teaching is a reason why many students interested in STEM leave the fields, and this is likely true in the geosciences as well. To understand what effective teaching (in producing learning, promoting diversity, equity, and inclusion, engaging the citizenry) looks like, GER needs to continue to grow and thrive as a field, and expand to cover other disciplines within the geosciences that are currently under-represented (e.g. atmospheric science, ocean science, seismology). There are a growing number of people who are currently interested in GER but lack the skillset, confidence in their abilities to conduct GER, or who have not been exposed to GER, but are fluid in their interests and might be interested in collecting data. This is a potentially catalytic, transformative moment for the GER community. It has some existing infrastructure and people resources that can be leveraged to support the efforts described above. As capacity grows, this is the time to enrich that infrastructure and people power.



Priority strategies:

- ❖ Move forward with defining research database through scoping need, use cases, partners, scope development, and implementation strategy
- ❖ Use infrastructure to develop more awareness of GER methods and research including better cross linking
- ❖ Develop strategies for supporting movement of research into practice
- ❖ Use infrastructure to increase GER capacity and skills at both entry and advanced levels
- ❖ Increase attention to inclusion in the GER community
 - Enhance mid-level professional development for GER through strategic webinars
 - Develop a partnership strategy



4. Improve capacity for finding people through Teach the Earth

Why is this valuable?

Professional development is often most successful when there is an authentic human connection that can be maintained over different temporal and spatial scales. Analysis of change strategies indicates that mere repositories of information rarely succeed in creating lasting change (Henderson et al., 2011²), but creating formal or informal "communities of practice" is effective (e.g., Wenger, 1998³). Similarly, community is based on relationships and connections are made by people. Many people are in small groups, projects, or departments, and thus it is critical to be able to connect them in order to build community. At the same time, the community is always evolving and new people are entering all the time so static pages cannot be relied upon. There are existing tools both within and outside of SERC that can be leveraged and utilized, such as ResearchGate or ORCID.

A screenshot of a profile page on the SERC website for Dexter Perkins. The page includes his name, affiliation (Geology, University of North Dakota-Hain Campus), a photo, and a list of activities he has contributed through SERC-hosted projects. The activities listed include 'Mass Balance and Mineral Reactions', 'Mineral Classification - Which is a Name?', and 'Examination of Igneous Rocks'.

Priority strategies

- ❖ Improve capacity for finding people using people pages, including career development for faculty
- ❖ Improve support for GER interactions with DBER
- ❖ Develop infrastructure to facilitate connections between research results and practice
- ❖ Enhance the functionality of people pages
- ❖ Enable mentoring for people in different types of geoscience education positions

² Henderson, C., Beach, A., & Finkelstein, N. D. (2011) Facilitating change in undergraduate STEM instructional practices: An analytic review of the literature, Vol. 48, p. 952–984, DOI: 10.1002/tea.20439

³ Wenger, E. (1998). Communities of practice: Learning, meaning, and identity. Cambridge University Press. <https://doi.org/10.1017/CBO9780511803932>

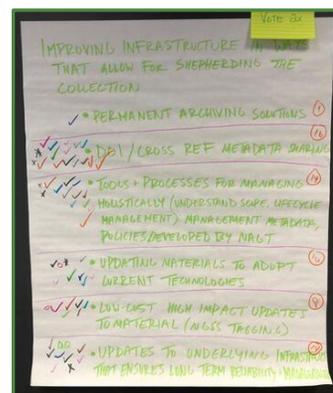
5. Improve the infrastructure in ways that allow for shepherding the collection

Why this is valuable?

The existing collection includes thousands of resources that are critical to the day-to-day work of the community. This collection reflects a large legacy of investment from NSF and others although much of the heavily used collection is no longer directly funded. So it is important that the collection be maintained to a high standard and continue to be available in ways that are responsive to the changing technical landscape. The existing collection also represents a huge opportunity for remixing and repurposing. Making this possible will multiply the value of the original investment. The existing content also represents a rich resource that can be mined to understand the historical social and technical work of the geoscience education community and to inform best practices for future work.

Priority strategies

- ❖ Incorporate digital object identifiers (DOIs) and Crossref metadata sharing into resources such as white papers, activity sheets, and datasets
- ❖ Develop tools and processes for managing the collections holistically including understand its scope, and providing for life cycle management with supporting metadata and policies.
- ❖ Update underlying infrastructure to ensure long term reliability and manageability
- ❖ Update materials to adopt to current technologies
- ❖ Make low-cost, high impact updates to material (e.g. NGSS)



6. Clarify the vision, audience, and description for the Teach the Earth portal, infrastructure services, and SERC office

Why is this valuable?

It is currently difficult for users (and potential users) to understand how TTE and SERC differ. Consequently, there is a need to clarify what makes each of them distinct from the other and how they relate to each other. There is a need to define mission, vision, goals/objectives and audience(s) so that it is clear to others what SERC and TTE do and what value they add to the geoscience education community. These can be mapped to the current activities of SERC and TTE. Clarity will help to enable clearer communication with users and partners, focus evaluation efforts, and improve efficiency and impact.

Infrastructure Support for High Interest Activities

The group brainstormed how the infrastructure could support and better serve five activities of high interest.

Ocean and Atmospheric Sciences

How could the infrastructure better serve ocean and atmospheric science education?

There is a void in atmospheric and ocean sciences right now for this kind of infrastructure, and a huge need for the services that SERC provides. The key to reaching these groups is to market the services and infrastructure - let the tools be the way in. Having a human explain it the first time is critical to help people understand the potential. Then having ways for them to be reminded: a one-pager and temporary access to the back end would help.



K-12 and Informal Education

How could the infrastructure better serve K12 and informal geoscience education?

The infrastructure could better serve K-12 and informal educators and students by enhancing existing collections and improving discovery of the resources within those collections. This starts with a coherent ontology oriented towards these users, such as tagging resources with American with Disabilities Act compliance and the NGSS. Multiple-tag resource filtering that can be achieved from main landing pages can improve the ease and efficiency of resource discovery. A major challenge is making the user experience comparable for students with disabilities enabling the achievement of the same learning objectives. Potential strategies for enhancing accessibility for students with disabilities include captioning, search, and 508 compliance. This process could benefit from tools for testing and enhancing accessibility compliance.

Teaching with Authentic Data

How could the infrastructure better serve teaching with authentic data?

There is already a tremendous amount of support for teaching with data, but it is difficult to navigate. This can be improved through simplifying the online interface by 1) culling outdated "Teaching with Data" pages and activities; 2) separating out pedagogy, teaching activities, and data repositories and analysis tools; and 3) adding a more human connection to teaching with data through webinars that allow people to share out their data-rich activities and through a community forum in which people can ask for specific data-rich activities and sources. One area of particular enhancement would be to create a curated set of resources that students can directly use.



Providing Career Guidance and Connections to the Workforce

How could the infrastructure better enable career guidance and connections to the workforce?

There are many strategies that could be implemented so that the infrastructure better enables career guidance and connections to the workforce. These include enhancing resource collections, organizing resources for students, improving capacity for finding mentors and connections through people pages, and making connections with employers and other professional societies. The infrastructure could better serve students, faculty, and employers by developing a central portal for career information for these groups. This could include seeking advice from and within the community and additional infrastructure for professional development for people providing career planning services and education.

Engaging with Local Issues

Beyond geographic search how could the infrastructure better support educational engagement with local issues?

Communication is key to social and cyberinfrastructure aimed at connecting students, teachers, and communities with issues of local relevance. Tailoring content to the audience and using appropriate language helps to frame local issues for the users of the social and cyberinfrastructure. The flexibility of these infrastructures allows them to acknowledge hooks, links, and the importance of economics to local issues (e.g. local hazards, local workforce, health). Connecting communities and local issues requires a social and physical cyberinfrastructure that emphasizes engagement and the importance of hearing all voices. This includes the need for the development of best practices for a cycle of engagement (initial engagement to synthesis) that is transparent to the communities and individuals involved through mechanisms such as guiding rubrics and listening sessions. To support practices and principles, visualize a theory of change for the social and cyberinfrastructure. A social and environmental justice portal is envisioned that could support this work and include topics such as earth systems science, case studies, a partnership matrix, and discussion of vision, mission, and goals.

Moving Forward

This set of six community priority recommendations sets a path forward for NAGT and SERC as they look to expand and enhance the infrastructure they provide to geoscience education. As is clear from the recommendations the challenges faced go beyond the reach of any single group or organization. These challenges will require community-wide engagement. Engagement supported by infrastructure that enables, and an ethos that values, collaborative problem solving. We hope that this set of recommendations can serve as a guidepost for all those in the community involved in providing the infrastructure that will support the advancement of geoscience education.



Workshop Community

This workshop was organized by the Science Resource Center (SERC) in collaboration with the National Association of Geoscience Teachers (NAGT). Participants were invited with the intention of creating a diverse set of informed perspectives including geoscientists studying all aspects of the Earth, infrastructure users and non-users, groups that are underrepresented in the current user community, and experts in cyberinfrastructure development. Participants, conveners, and staff are identified below.

Workshop Participants

Wendy Abshire, Education Program, American Meteorological Society
Chris Atchison, School of Education and Department of Geology, University of Cincinnati
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Kristin O'Connell, Science Education Resource Center, Carleton College



Appendix A: Additional Priority Strategies

The priority strategies listed in the body of this report represent the most popular strategies, based on a vote from workshop participants. Additional strategies developed by workshop participants are listed below.

Recommendation 1: Improve Resource Discoverability

Additional Strategies:

- ❖ Strengthen connections to resources held on other platforms including those developed in informal education
- ❖ Implement accessibility best practices
- ❖ Strengthen connections between GER and activities on Teach the Earth (TTE)
- ❖ Deconvolve the resources about pedagogy, teaching activities, and data repositories/tools
- ❖ Develop a coherent ontology oriented towards users, for example tagging with Americans with Disabilities Act compliance and the NGSS
- ❖ Curate the teaching with data collection for high quality resources and ease of use
- ❖ Develop search and resources that support teaching in local context
- ❖ Improve cross-project linking
- ❖ Support discovery and use for NGSS implementation
- ❖ Support discovery of documented interactions of cross-group projects (local community, scientists, educational outreach, education researchers)

Recommendation 2: Improve connections to other education and research partners, and develop a strategy for partnerships that increase resource completeness and impact

Additional Strategies:

- ❖ Connect with other career information available on other sites
- ❖ Connect community professionals and employers with students seeking career information, opportunities, and mentoring--in person and virtually
- ❖ Develop infrastructure to connect NAGT and SERC with potential or societies with industry connections to geoscience education community (e.g. NAGT liaisons to societies like American Association of Petroleum Geologists, Society of Exploration Geophysicists, etc.)

Recommendation 3: Expand resources and services that support geoscience education research (GER)

Additional Strategies:

- ❖ Improve GER discoverability and maintain the GER toolbox
- ❖ Support development of community among graduate students



Recommendation 4: Improve capacity for finding people through Teach the Earth

Additional Strategies:

- ❖ Provide plug and play mechanisms for broader impacts (e.g. activity sheets, materials development process)
- ❖ Conduct a workshop on 'Teaching Career Planning in the Geosciences'
- ❖ Develop a strategy for badging or credit for learning

Recommendation 5: Improve the infrastructure in ways that allow for shepherding the collection

Additional Strategy:

- ❖ Develop permanent archiving solutions



Appendix B: Other Recommendations for Infrastructure

In the course of recommending broad improvements in the above areas, the following specific recommendations for infrastructure improvement were identified.

Increase capacity for supporting all students' earth learning

Strategies

- ❖ Create and make a visible statement on what diversity, equity, and inclusion means and its implication on scope of TTE and On the Cutting Edge
- ❖ Improve resources (web and professional development) on career guidance
- ❖ Consider badging, certificate, and micro-credential opportunities aligned with employer and industry desires
- ❖ Share resources across institutions where there are gaps in needed tools, etc.
- ❖ Provide more travel support for student participation in NAGT events
- ❖ Adapt resources to an online or blended education environment



Improve project support services

Strategies

- ❖ Communicate and scaffold best practices for project management and service use including case studies
- ❖ Create a community of practice for projects
- ❖ Add threading to discussion threads
- ❖ Increase professional development and support for new projects and community leaders including proposal review

Develop resources for students

Strategies

- ❖ Build a platform for students to share ideas and experiences as undergraduate and graduate students
- ❖ Create a tool for students to find and reach out to local earth scientists
- ❖ Create a student portal where students can access information designed for their consumption
- ❖ Develop a competency management system for students
- ❖ Work with and make use of other professional societies to provide support for information on career pathways

Enhance the collections

Strategies

- ❖ Strengthen collection of resources held on other platforms
- ❖ Provide guidelines for accessibility and use of jargon
- ❖ Integrate more video into web resources



- ❖ Make the activity review process more transparent – tagging in a way that means something to both "insiders" and "outsiders"
- ❖ Provide Altmetrics and other use numbers that support author recognition and reward
- ❖ Design a course/learning management system that allows users to pull resources from different parts of the site to create their own course
- ❖ Create mechanisms for identifying and implementing high priority additions to the collections such as
 - ◆ Strengthen resources for educational work in and with local communities including place based collections
 - ◆ Create toolbox-like structures focused on assessment and diversity, equity, and inclusion topics
 - ◆ Grow the collection of instructor stories
 - ◆ Add resources on using social media as a means of connecting to students or teachers directly
 - ◆ Grow offline and alternative language materials
 - ◆ Compile and leverage existing SERC resources to address industry competency needs and provide scope and sequence rationale for users
 - ◆ Organize resources for students
 - ◆ Improve capacity for finding people through TTE
 - ◆ Expand and showcase resources and services that support engaging, supporting, and preparing diverse students
 - ◆ Work with industry professionals to define competencies
 - ◆ Create a collection that is richer in activities addressing values from different communities and enable a search by societal issue and geography
 - ◆ Increase support infrastructure for citizen science

Improve tools for assessing infrastructure use and performance

Strategies

- ❖ Develop a logic model and associated set of metrics for monitoring use
- ❖ Develop more robust feedback loops for continuous improvement



Appendix C: Other Strategies to Widen Use of Infrastructure

In the course of recommending broad improvements to the infrastructure, the following specific strategies for increasing use of the infrastructure were identified.

Market the infrastructure

Strategies

- ❖ Develop social media presence to help make connections
- ❖ Clarify services provided and what they cost for new project partners
- ❖ Improve marketing and messaging about what SERC is, what it can provide, how SERC and Serckit can help move a project forward
- ❖ Expand on the use of traveling workshop resources for campus communities of practice



Market the resources and Teach the Earth portal

Strategies

- ❖ Grow a more robust social media presence
- ❖ Consider branding and language to promote use and inclusion
- ❖ Clarify the scope, community, and values underpinning TTE
- ❖ Use targeted marketing and collaboration to reach new user groups

Engage the community in developing an overarching strategy for impacting geoscience education

