



Community and Online Resources Leading to National Impact -- Lessons from SERC

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SERC in one Slide:

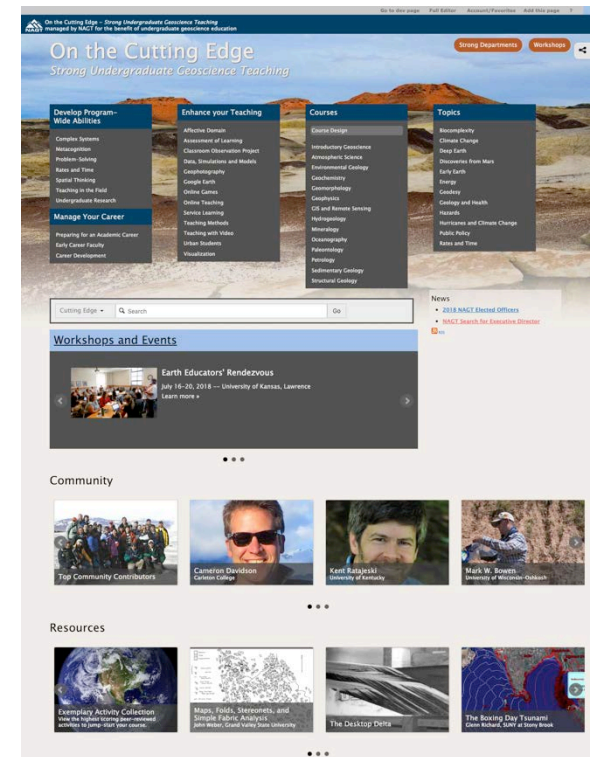
- We work collaboratively on national-scale projects to improve STEM education
- Grant funded (100+ NSF grants over 17 years)
- Online resources are key in most of our projects:
 - 38,000 pages of content
 - 5 million annual visitors
 - Participants/contributors from over 1100 institutions

<https://serc.carleton.edu>



Example #1: On the Cutting Edge

- Professional Development Program for Undergraduate Geoscience Educators
- Improved teaching practice nationally over 10 years.
- 5,000 page website
- 118 workshops directly reaching 2800 participants



<https://serc.carleton.edu/NAGTWorkshops/>

Manduca, C.A., Iverson, E., Luxenberg, M., Macdonald, R.H., McConnell, D., Mogk, D., and Tewksbury, B., 2017. [Improving undergraduate STEM education: The efficacy of discipline-based professional development](#), *Science Advances*, Vol. 3, no. 2.



On the Cutting Edge

- Focused on changing teaching practice but organized around course content and disciplinary interests
- The model:
 - Work with groups of interest peers
 - Contribute your current best stuff
 - Discuss/refine/review in the context of generic best practices
 - Make it all visible for peers who weren't present



Example #2: InTeGrate

- *Interdisciplinary Teaching about Earth for a Sustainable Future*
- A shift in the undergraduate curriculum
- Project started in 2012 with materials available starting 2015
- So far has reached over 1,000 instructors, 100,000 students

InTeGrate
Interdisciplinary Teaching about Earth for a Sustainable Future

Teaching about Earth for a Sustainable Future: Materials for Faculty and Instructors
Classroom Tested, Peer Reviewed and Designed to Fit into Your Course
[Explore the Teaching Materials](#)

Support Sustainability Beyond the Classroom: Models for Department, Program or Institutional Changes
Lay the foundation for tomorrow's sustainability workforce. Explore models for program-scale changes to: Attract and Support Diverse Learners, Teach Earth Across the Curriculum, Build Connections to Strengthen K-12 Teaching, Support Transitions to Workforce, Transfer and Careers and Make Change happen at your institution.
[Program Level Change: Strategies and Models](#)

Intro to InTeGrate
Find teaching materials, best practices and a community that supports teaching for a sustainable future.
[Learn how you can use InTeGrate](#)

Featured Resources:

- Why do we teach geoscience to non-majors?**
Kathie Kraft, Whitman Community College
- Unit 2: Hurricane Formation**
Liz Wilson, Western College; Josh Saldaña, Middlebury
- Unit 6: Predictions and Evacuation**
Liz Wilson, Western College; Josh Saldaña, Middlebury
- Stanford University - MSJ and 2YC Teaching Program**
Angela Anderson-Bellamy, Stanford University, Sierra
- Grand Valley State University - Integration of Earth Science Content across Science Teacher Preparation Courses**
Dave Haines, Grand Valley State University, Spaulding
- Cultivating Sustainability at Shippensburg University**
Joni Curren, Shippensburg University, Penn State, Berks
- Soils, Systems, and Society**
Kathryn Baskin, Eastern Washington University, Janssen
- CE/FI: Climate Science in Literary Texts**
Jennifer Hornsman, Westfield State University, RIA Dukes, ...
- Ocean Sustainability**
MICHELLE KRITZEL, Southampton Community College, Ashli ...
- Regulating Carbon Emissions**
Pauline K. Emissions, Dakota Singh (Grand College)
- Lead in the Environment**
Liz Wilson, Western College; Josh Saldaña, Middlebury
- Food as the Foundation for Healthy Communities**
Robert D. Schindler, Grand Valley State University, ...

News

- NAGT Search for Executive Director**
NAGT is seeking a qualified person to serve as the Association's Executive Director to begin August 2023.
NAGT's mission is to support a diverse, inclusive, and thriving community of educators and education researchers to improve teaching and learning about the Earth. NAGT represents the collective voice of K-12 teachers, college and university faculty, and informal educators in museums and science centers who share a vision to build geoscience expertise and an Earth-literate society through high-quality education. We seek an exceptional Executive Director to build on past successes and to provide strategic leadership to guide NAGT toward new opportunities for growth.
To learn more about the position and instructions to apply, visit [this website](#).
- David McConnell Publishes Article on InTeGrate in Earth Magazine**
David McConnell of North Carolina State University published an article on InTeGrate in the latest issue of Earth magazine. Read, "Making the Road Road Last: Geoscience Goes Green" the article calls attention to opportunities within introductory geoscience courses to address grand



InTeGrate

- Multi-institution teams developed new course materials (36 different 2-12 week modules)
- Parallel focus on institutional change
 - Profiled the larger scale change at 17 institutions
 - Serve as exemplars
 - Extracted 5 core strategies
 - Provide guidance on how to execute the strategies drawing on examples from the exemplar profiles.
- Use the materials to drive webinars and traveling workshop program.



Strategies that have worked -1

- Align your approach carefully with work people already have to do.
 - Who are the correct change agents?
 - Why is doing your thing more important (to them) than what's already on their plate?
 - How to engage with the existing players/partners?



Strategies that have worked -2

- Have the community build the resource
 - Have them share the best of what they are doing (how to motivate this?)
 - Engage in reflection/revision informed (gently) by research/best practices
 - Make visible through a collection that supports a positive reinforcement loop via social norming.
 - Synthesize themes out of the collection
 - May require multiple overlapping collections to appeal to group identities.
 - Tools and processes need to be carefully aligned.



Strategies that have worked -3

- Get it used
 - Sense of ownership can drive use because of norming and trust of peers.
 - Use it to drive traditional professional development (workshops, webinars, etc...)
 - Integrate with existing national and institution efforts that hit the right audience with an overlapping interest.
 - Traveling workshop model
 - Everything visible on the web and structured in way that aligns with its likely use (takes extra effort)