

FEBRUARY 2017



THE GER EXCHANGE

Promoting high-quality scholarly research in geoscience education.

*Join the **STEM DBER Alliance***

With funding from the Helmsley Trust, AAAS and APLU held a meeting of discipline-based education researchers (DBER) in November 2016 to discuss building a cross-DBER community of scholars. You can read more about the [inaugural meeting here](#).

From that conversation emerged a vision for a cross-disciplinary STEM DBER community that will advance and disseminate knowledge and theory that promote learning and success for all students across STEM fields. This community has the opportunity to address complex, cross-cutting research questions, as well as issues that arise in individual disciplines and can best be understood and addressed with theories that transcend disciplines. At its core, this STEM DBER community will focus on undergraduate learning and teaching at 2- and 4-year colleges and universities, with links to K-12 and graduate education. STEM is broadly defined to

include social and behavioral sciences, and **participation of geoscientists is crucial to seeing our community well-represented in this conversation.**

You can join the conversation by [joining the STEM DBER Alliance now!](#)

Featured Article

Assessment of scientific literacy: Development and validation of the Quantitative Assessment of Socio-Scientific Reasoning (QuASSR)

"We describe the development and validation of the Quantitative Assessment of Socio-scientific Reasoning (QuASSR) in a college context. The QuASSR contains 10 polytomous, two-tiered items crossed between two scenarios, and is based on theory suggesting a four-pronged structure for SSR (complexity, perspective taking, inquiry, and skepticism). In the context of pre-post measurement within a 1-week SSI-based unit on fracking, we found that the four sub-constructs represent a one-dimensional progression of ideas, and that SSR is largely independent of declarative knowledge. In the validation process, we discovered small inconsistencies in item functioning between scenarios in the areas of complexity and perspective-taking, but determined that resulting biases sat well within the uncertainty in students' measures. In light of future development and use of the QuASSR, we determined that use of a single scenario is sufficient to produce a measurement reliability of 0.7. Given the time it takes for students to complete a scenario, we consider a 3-scenario QuASSR, and its accompanying measurement precision of 0.85, to be the practical upper precision limit of the QuASSR when used in experimental contexts. Finally, we found no significant change in SSR due to the SSI-based intervention. This mirrors prior reports of short-duration interventions targeting SSR. Our data suggest that as a cognitive construct underpinned by political, moral, and ethical ideologies around SSI, successful efforts to facilitate growth must target SSR as a central focus upon which more basic content knowledge is contextualized, so that sufficient instructional duration can be given to this important construct.."

Romine, W. L., Sadler, T. D., & Kinslow, A. T. (2017). [Assessment of scientific literacy: Development and validation of the Quantitative Assessment of Socio-Scientific Reasoning \(QuASSR\)](#). *Journal of Research in Science Education*, 54(2), 274-295.

NAGT Seeks [Editor-in-Chief](#) for *Journal of Geoscience Education*

In overseeing the journal, the Editor-in-Chief is responsible for its ability to support robust geoscience education research and its use in all aspects of teaching and learning about the Earth. The Editor takes the lead on maintaining a high-quality peer reviewed publication that responds to the needs and interests of NAGT, the geoscience education research communities, and the dynamic landscape of scientific publishing and communications. We seek an editor who will work with us to increase the impact, stature, influence, reach, and visibility of the journal. The deadline for [expressing interest](#) in the position is **March 1, 2017**.

Job, Internship, and Scholarship Opportunities

- [Postdoctoral Research Associate](#), Center for STEM Learning, University of Colorado Boulder (review begins **February 3, 2017**)
- Assistant Professor in Earth, Ocean, or Environment DBER, University of South Carolina (review begins **February 15, 2017**, contact Administrative Coordinator [Kelly Hamilton](#) for details)
- [Senior Associate Director for Teaching Initiatives & Programs](#), McGraw Center, Princeton University (preferred consideration submission by **March 3, 2017**)
- [Educational Development Specialist for Natural Sciences & Engineering](#), Center for Excellence in Teaching and Learning, University of Rochester (click "Job Search for External Candidates" under "Jobs" drop down, search reference ID 198614)
- [Maine STEM Partnership Coordinator](#), Maine Center for Research in STEM Education, University of Maine
- [Assistant Director](#) for STEM education, Center for Teaching Excellence, University of Virginia (search for posting #0619731)
- [Assistant Director for Undergraduate Instructional Development](#) (preferred degree in STEM or STEM education), Sheridan Center, Brown University

Call for Data on Course Innovations

Scott Freeman, Lecturer in the Department of Biology at the University of Washington, is leading a team conducting a meta-analysis of how innovations in undergraduate STEM courses have impacted traditional achievement gaps experienced by students who are 1) female, 2) members of underrepresented minorities (African-American, Hispanic, Native American, or Pacific Islander/Native Hawaiian), 3) from low-income backgrounds, and/or 4) first-in-family to complete college. This project is a follow-on to a paper that the group published in PNAS in 2014, showing that for all students in STEM, active learning has large benefits compared to traditional lecturing (<http://www.pnas.org/content/111/23/8410.abstract>).

The researchers involved believe it is very important to include as many relevant datasets as possible--published or unpublished, regardless of whether they showed an impact or not. If you are willing to share data on course innovations you've been involved in and the ways in which they affected the performance of any or all of the types of students listed above (in a negative, neutral, or positive way), please email Dr. Freeman at srf991@uw.edu for more information.

Upcoming Grant and Award Deadlines

- 2016 Emerald/Higher Education Teaching and Learning Association [*Doctoral Research Awards*](#) Application Deadline **March 1, 2017**
- National Science Foundation [*Building Community and Capacity in Data Intensive Research in Education*](#) Full Proposal Deadline **March 15, 2017**
- Paleontological Society [*Outreach and Education Grant*](#) Application Deadline **March 24, 2017**
- National Science Foundation [*STEM + Computing Partnerships*](#) Full Proposal Deadline **March 29, 2017**
- Association for Women Geoscientists [*Chrysalis Scholarship*](#) Application Deadline **March 31, 2017**
- National Association of Geoscience Teachers [*Shea Award*](#) Nomination Deadline

April 1, 2017

● Association for Women Geoscientists [Outstanding Educator Award](#) Nomination
Deadline **April 1, 2017**

● National Science Foundation [Dear Colleague Letter: Public Participation in STEM Research: Capacity-building, community-building, and direction-setting](#) Application
Deadline **April 11, 2017**

● Spencer Foundation [Small Research Grants](#) Full Proposal Deadline **May 1, 2017**

Seeking Nominations and Applications for Hearts of G.O.L.D. (Geo Opportunities for Leadership in Diversity)

The NSF project called [Hearts of G.O.L.D.](#) (Geo Opportunities for Leadership in Diversity) aims to empower geoscience discipline leaders with the skills to confidently share their thoughts about diversity. The project recognizes that there are many respected geoscientists who value diversity and do their part by mentoring and promoting underrepresented groups. Unfortunately, many of these same people may lack the confidence to confront skeptical, careless, and/or defiant colleagues. This project aims to change that.

The project is seeking nominees to attend a two-day workshop in Colorado Springs, July 24-25 (all costs covered). Ideal nominees are those who can use help with talking about diversity, so please refrain from nominating those who are already strong voices for diversity. Think about those who mostly lead "by example" rather than being outspoken. Likewise, the project leaders want well-established, respected colleagues who already possess the power to influence others.

[Self-nominations/applications](#) are welcome.

Upcoming Session on Public Communication and Teaching about Volcanoes

[IAVCEI 2017 Scientific Assembly](#) in Portland, OR (August 14-18, 2017)

VII.3 Start spreading the news: Diverse and effective methods for communicating

about volcanoes

Volcanic activity is inherently exciting and interesting. Communicating volcano information not only serves people's interests, it is also vital for volcano observatories, public agencies, and science communicators to deliver reliable volcano data and hazards information in a timely manner, especially to at-risk populations. Factual scientific information can be distributed in a variety of ways – from interactive web-based media to in-person place-based teaching. Social media has become increasingly important in spreading information and creating interest, but challenges arise when non-authoritative sources undermine facts with inaccurate information. Educational and outreach activities that incorporate authentic data help people better understand potential volcanic hazards, calculate related risks and prepare for emergencies. The aim of this session is twofold: (1) highlight effective methods for volcano scientists and public agencies to convey accessible, factual and time-sensitive information via social media; and (2) provide examples of projects that use geologic data to teach in university environments, train non-scientist emergency management personnel and disseminate information before and during volcanic crises. [We invite submissions](#) of successful approaches that use a variety of information delivery platforms. Presentations should include qualitative or quantitative assessments that demonstrate the efficacy of educating the target population.

Submit to the GER Exchange

NAGT-GER provides monthly updates on professional opportunities, funding, articles of note, researcher profiles, and other content of interest to our membership. Please consider [contributing items](#) of interest for inclusion in future editions of the Exchange!

For questions, or to join the GER Communications Committee, contact Communications Committee Chair [Kelsey Bitting](#).



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This monthly email goes out to all GER Division members to share opportunities and ideas relevant to the community.

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