

NOVEMBER 2018



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## THE GER EXCHANGE

*Promoting high-quality scholarly research in geoscience education.*

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### 4 years and counting...

A message from outgoing Past President, Nicole LaDue

In the first year of my tenure-track position at NIU, I made the rookie decision to self-nominate for a leadership role in the newly formed Geoscience Education Research (GER) Division. Faculty are usually told to stay away from large service obligations before tenure. I was so naïve, that I volunteered for the Vice President role so I could be involved, but not in charge! Little did I know that the VP rotates into the President and then Past-President roles. Oops. Fortunately, I was in excellent company with the inaugural team of officers: Laura Lukes (President), Katherine Ryker (Secretary), and Kim Cheek (Treasurer). Together, we established this new division in the vision set forth by those who proposed the division: Bruce Herbert, Dave Mogk, and Eric Riggs.

During the first official year of our division, Laura Lukes authored an editorial on establishing a Community of Practice for GER (Lukes et al., 2015). In that piece, she describes the need for engagement in relationship-building activities, establishing shared practices, and growing a sense of identity. To that end, the GER Division has established an annual session at GSA focused on methods and theory of GER to collectively co-construct our community norms. Under the leadership of Kelsey Bitting, the GER Division newsletter has grown into an impressive professional resource. Each month, one researcher in our community discusses their work so we can get to know one another, journal articles from beyond the Journal of Geoscience Education are highlighted to

infuse the community with new ideas, and job openings and grant deadlines are posted to further our professional opportunities. Various executive board members have lead webinars to reach out to the broader geoscience community (e.g. AGU Heads and Chairs and IRIS webinars) and infuse our own division with new ideas (e.g. Academic Careers in GER and Introduction to GER Methods). We host webinar recordings on our website to provide ongoing resource access for our community.

The GER Division continues to grow from the first year, when we were 207 members strong, to the present membership of over 350. The executive board is proposing a substantial overhaul to the bylaws to expand the leadership to add a Media Director position and Graduate Student Liaison. We have also established two new awards that uniquely honor the contributions of GER faculty who have transformed our community through their professional work and non-GER faculty that have collaborated to infuse GER with new insights, propelling our collective work in new directions. The first Transformation Award honors Julie Libarkin, whose seminal work in GER infused practices from the larger education and psychology communities and whose efforts as JGE editor established the distinction between Research and Curriculum and Instruction type articles. The first Collaboration Award honors Tim Shipley, who has almost become a geologist himself through his transdisciplinary research merging psychology methods and spatial thinking into the geosciences. The substantial contributions of researchers committed to GER provide the foundation for the Community of Practice we enjoy today.

As we enter our 5th year as an NAGT Division, I hope you will consider taking an active role in growing the GER community. The GER Division is run on volunteer efforts. It is our collective community sweat equity that makes it relevant to our professional work. What may have been a rookie decision in my first year on the tenure track turned out to be a rich opportunity for me to fight the isolation of doing GER in my institutional context and cultivate activities that help me grow as a researcher (e.g. the GSA Methods session speakers, the newsletter, webinars, etc.). Please consider self-nominating for a position this spring or answering the call for an ad-hoc committee to contribute your vision of the GER Community of Practice.

## Featured Article

### Undergraduate geoscience education research: Evolution of an emerging field of discipline-based education research

"Discipline-based education research (DBER) conducted by faculty within geoscience departments can address identified needs in undergraduate geoscience education. This study explores the evolution of undergraduate geoscience education research (GER) from 1985 to 2016, primarily in terms of the types of published research and secondarily in terms of the insights this literature offers on the evolution of GER as a scholarly discipline. Stokes' (1997) quadrant model of research types is used as a theoretical framework for the former and Kuhn's (1970) model of disciplinary paradigm for the latter. An exploratory sequential mixed-methods approach to a systematic literature review of 1,760 articles is utilized. The period 1985–2000 is characterized by proto-research as evidenced by the abundance of instructive and informational education articles rather than research articles. From 2000 to 2011, GER underwent a growth period characterized by the presence of applied, use-inspired, and pure basic research. The period 2011–2016 appears to be a period of relative steady-state conditions in the normalized number of GER publications per year. Existing gaps in knowledge about geoscience education, the evident unfamiliarity with education and social science research methodologies among authors of GER articles, and efforts to build consensus about what GER is and how to conduct it suggest that GER is preparadigmatic or at a low paradigm state. That is, GER is an immature discipline as far as the evolution of a discipline goes. A path forward is proposed for the continued evolutionary growth of GER. This study provides new perspectives on the emergence of GER as a discipline that can be used as a basis for studies on cross-disciplinary DBER comparisons."

Arthurs, L. (2018). Undergraduate geoscience education research: Evolution of an emerging field of discipline-based education research. *Journal of Research in Science Teaching*, 1-23.

## Grant, Award, and Scholarship Deadlines

- NSF [\*Improving Undergraduate STEM Education: Education and Human Resources\*](#) (Development and Implementation Tier) Full Proposal Deadline **December 11, 2018**
- NSF [\*ADVANCE: Increasing the Participation and Advancement of Women in Academic Science and Engineering Careers\*](#) "Partnerships" (letter of intent deadline **December 12, 2018**)
- NSF [\*Alliances for Graduate Education and the Professoriate \(AGEP\)\*](#) (full proposal deadline **December 14, 2018**)
- NSF [\*Improving Undergraduate STEM Education: Education and Human Resources\*](#) (Exploration and Design Tier) (submission window **October 1, 2018-September 30, 2019**)

## Call for Applications for JGE Associate Editors

Do you enjoy reviewing manuscripts and providing constructive feedback to authors? Are you interested in engaging more deeply in the review process? Would you like to be more involved in the geoscience education community? If so, you might be interested in serving as an Associate Editor. Find more [information here](#)- applications are due **November 10, 2018**.

## Job and Internship Opportunities

- [\*Midcareer Science & Technology Policy Fellowships\*](#), American Academy for the Advancement of Science (AAAS) (deadline **November 1**)
- [\*McDonnell Family Bridge Professorship in STEM Education Research\*](#), School of Engineering and School of Arts & Sciences, Institute for Research on Learning and Instruction, Tufts University (review begins **November 2**)

- Full-Time Permanent Lecturer, Department of Geosciences, Boise State University (deadline **November 15**; email [geosearch@boisestate.edu](mailto:geosearch@boisestate.edu) for details)
- Postdoctoral Scholar, Geoscience Education Lab, Northern Illinois University (review begins **November 15**; email [nladue@niu.edu](mailto:nladue@niu.edu) for details)
- Tenure-Track Faculty, Department of Earth Science, Utah Valley University (deadline **January 7, 2019**)
- <https://pathwaystoscience.org> maintains a database of graduate fellowships and postdoctoral positions that may be of interest to our community



## GER Division Events at GSA

Please join us for the GER Division business meeting at GSA on Sunday, Nov. 4 from 6-6:45pm in JW Marriott, White River Ballroom Sections G-H.

Also, stop by the NAGT booth to pick up your free GER Division tote bag (one per person, members only please!)

### GER-Sponsored GSA Sessions

#### **T72. Integrating Active Learning Strategies into College-Level Geoscience Classrooms: Implementation, Effects, and "Lessons Learned"**

*Jason P. Jones, Katherine Ryker, LeeAnna Young Chapman, C. Doug Czajka*

The integration of active learning strategies into college-level STEM courses has been shown to improve student outcomes. This session will explore the evidence behind incorporating active learning into geoscience courses.

#### **T76. Beyond the Road-Cut: Virtual, Local, and Nontraditional Field Teaching and Learning Experiences**

*Lauren Neitzke Adamo, Julia Criscione, Jacob Setera, Kelsey S. Bitting*

Virtual exploration, museum-based assignments, and analysis of geoscience on campus can be more inclusive ways to enhance students' conceptual learning and motivation. This session welcomes presentations describing nontraditional field experiences and evidence of their effectiveness.

#### **T78. Barriers, Misconceptions, and Progress in Improving Climate Literacy and Strategies for Communicating about Climate Change**

*Don Duggan-Haas, Patrick Chandler, Anne U. Gold*

This session will focus on research and evaluation of climate literacy efforts and effective ways of communicating about climate change in general but also in cultural relevant contexts.

#### **T84. Making Sense of Methodologies and Theoretical Frameworks in Geoscience Education Research**

*Katherine Ryker, Karen S. McNeal, Anne Gold, Leilani Arthurs*

Methods and theoretical frameworks can come from multiple disciplines to

shape the forefront of our field. Presenters are encouraged to highlight their decision-making process in research studies that advance the field. New approaches and applications of established methods/frameworks are welcome.

## Early-Career Geologists Survey

Researchers at the University of South Florida (PI Victor J. Ricchezza, [ricchezza@mail.usf.edu](mailto:ricchezza@mail.usf.edu), IRB approval 35492) are seeking early career geologists (3-10 years since BA/BS in geology with 3-7 years of related experience, which can include grad school) for an [anonymous online survey](#) that will assist the PI in the completion of a doctoral dissertation. The survey should take less than 10 minutes to complete.

### 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 Biting](#).



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

**Our mailing address is:**

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