

OCTOBER 2018



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## THE GER EXCHANGE

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

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### Oct. 2018 Spotlight: Cory Forbes

The September 2018 [GER Spotlight](#) is Dr. Cory Forbes, Associate Professor of Science Education in the School of Natural Resources at the University of Nebraska-Lincoln. He is a former high school science teacher who currently teaches interdisciplinary undergraduate STEM courses and graduate-level professional development courses for in-service teachers. His research focuses on model-based K-16 teaching and learning and systems thinking about the Food-Energy-Water-Nexus. Check out the full [October 2018 Spotlight here!](#)



## Featured Article

### [Investigating the use of spatial reasoning strategies in geometric problem solving](#)

"...One of the most important cognitive abilities in STEM education is spatial ability however understandings of how students use this ability in practice are currently underdeveloped. Therefore, this study aimed to investigate how levels of spatial ability impacted both performance and approaches to problem solving. In the context of graphical education, selected due to its significant overlap with technological, mathematical and engineering knowledge, a repeated cross-sectional study design was implemented to gather longitudinal data of student approaches to problem solving. A battery of psychometric tests of spatial ability was administered to two cohorts and problem solving was examined through a variety of graphical problems. The findings illustrate a relationship between attaining higher levels of spatial ability and performance. Participants with lower levels of spatial ability evidenced the utilisation of models to a greater extent with a particular emphasis on models with the capacity to alleviate the need for spatial reasoning."

Buckley, J., Seery, N., & Canty, D. (2018). [Investigating the use of spatial reasoning strategies in geometric problem solving](#). *International Journal of Technology and Design Education*, 1-22.

## Job and Internship Opportunities

- [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**)
- [Midcareer Science & Technology Policy Fellowships](#), American Academy for the Advancement of Science (AAAS) (deadline **November 1**)
- <https://pathwaystoscience.org> maintains a database of graduate fellowships and postdoctoral positions that may be of interest to our community

# Conference Talks on the Community Framework for GER

Interested in learning more about the [Community Framework for GER](#)? Attend an upcoming talk at one of this fall's conferences!

## **AMS/AGU Joint Heads and Chairs Meeting (October):**

- [Disciplinary Based Education Research \(DBER\): How it can help us and how do we get started?](#) (Session Chair: Donna Charlevoix). [Research Theme: Conceptual Understanding - Environmental, Ocean, Atmosphere and Climate Science Content.](#)

## **GSA (November):**

- [Geoscience Research And Information Needs For Supporting And Improving K-12 Earth And Space Sciences Teacher Education](#) (Kim Cheek, Heather Petcovic, Jason Cervenac, Robyn Mieke Dahl, Nancy Price) Research Theme: [Teacher Education](#)
- [Research On Access And Success Of Under-Represented Groups In The Geosciences: Results From The Community Framework For Geoscience Education Research](#) (Eric Riggs, Caitlin Callahan, James Brey) Research Theme: [Access and Success of Under-Represented Groups](#)
- [A Call For More Geoscience Education Research On Teaching About Earth In The Context Of Societal Problems](#) (Rachel Teasdale, Hannah Scherer, Cory Forbes, Rebecca Boger, Lauren Holder) Research Theme: [Teaching with Societal Issues](#)
- [How Do We Learn How Students Are To Learn? GER Grand Challenges On Solid Earth Conceptual Understanding](#) (Eric Pyle, Andrew Darling, Baily Zo Kreager, Susan Howes Conrad) Research Theme: [Conceptual Understanding - Solid Earth](#)
- [A Community Framework for Geoscience Education Research: Research on Geoscience Students' Self-Regulated Learning.](#) (Karen McNeal, Kaatje Van der Hoeven Kraft, Elizabeth Nagy-Shadman, Mary

Beck, Jason Jones). Research Theme: [Self-Regulated Learning, Metacognition and Affect](#)

#### **AGU (December):**

- [Grand Challenges for Future Research on Diverse Instructional Strategies to Improve Geoscience Learning Instructional Strategies](#) (Steve Semken, Prajukti Bhattacharyya, Don Duggan-Haas, Amy Pallant, Jennifer L Dickson, and Kristen K St John) Research Theme: [Instructional Strategies](#)
- [Research on Teaching about Earth in the Context of Societal Problems](#) (Lauren Holder, Rebecca Boger, Hannah Scherer, Cory Forbes, Rachel Teasdale). Research Theme: [Teaching with Societal Issues](#)

#### **AMS (January):**

- Atmospheric Sciences Education Research: Professional society support to an emerging community (Donna J Charlevoix, Cathy Manduca, Wendy Abshire). Research Theme: [Conceptual Understanding - Environmental, Ocean, Atmosphere and Climate Science Content](#). Direct link not yet available. Keep an eye out for the Symposium on Education program going live [here](#)!

## Grant, Award, and Scholarship Deadlines

- NSF [Improving Undergraduate STEM Education: Education and Human Resources](#) (Exploration and Design Tier) (submission window **October 1, 2017-October 2, 2018**)
- NaEd/Spencer [Dissertation Fellowship Program](#) (deadline **October 4, 2018**)
- NaEd/Spencer [Postdoctoral Fellowship Program](#) (deadline **November 1, 2018**)
- Spencer Foundation [Small Research Grants](#) (deadline **November 1, 2018**)

● 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**)

## GER Division Bylaws Revision

The GER Division announces revisions to the bylaws. The original bylaws were ratified in 2014. Since then, the Division has grown and we are looking forward to adding two new positions to the Executive Board: Media Director and Graduate Student Liaison. Additionally, we have removed gendered pronouns from the bylaws, adjusted the language on term lengths, and modified the structure and duties of the communications committee. We hope these changes better serve the GER community and welcome feedback. Please review the new bylaws and provide feedback by visiting this page: [https://nagt.org/nagt/divisions/geod/ger\\_bylaws.html](https://nagt.org/nagt/divisions/geod/ger_bylaws.html)

### 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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