#### Your Name

University of Idaho, College of Education, Department of Curriculum and Instruction P.O. Box 443082, Moscow, ID 83844-3082

Phone: email:

### (a) Professional Preparation

Black Hills State University, Elementary Education, B.S., 2001

Black Hills State University, Curriculum and Instruction, M.S., 2004

University of Minnesota, Curriculum and Instruction: Science Education, Ph.D., 2010

# (b) Appointments

2011-Present	Assistant Professor – University of Idaho, Department of Curriculum and Instruction
2010	Fellow – Doctoral Dissertation Fellowship, University of Minnesota
2007-2010	Graduate Assistant – University of Minnesota, Department of Curriculum and Instruction
2008-2010	Instructor – University of Minnesota, Department of Curriculum and Instruction
2009-2010	Student Teacher Supervisor - University of Minnesota, Department of Curriculum and
	Instruction
2001-2007	8 <sup>th</sup> Grade Science Teacher - Douglas Middle School, Box Elder, SD

### (c) Products

## (i) Five related products

- Hougham, R. J., Eitel, K. B., & Miller, B. G. (in press). AL@: Combining the strengths of adventure learning and place based education. *CLEARING*.
- Miller, B. G., Hougham, R. J., & Eitel, K. B. (in press). The practical enactment of adventure learning: Where will you AL@?. *Tech Trends*.
- Hougham, R. J., Bradley Eitel, K., & Miller, B. G. (2013). *Technology-enriched STEM Investigations of Place: Using Technology to Extend the Senses and Build Connections to and between Places in Science Education*. Manuscript submitted for publication.
- Miller, B. G., Cox, C. J., Hougham, R. J., Walden, V. P., Eitel, K. B., and Albano, A. D. (2013). *Adventure learning @ Greenland: An example of education and outreach for atmospheric research.* Manuscript submitted for publication.
- Veletsianos, G., Miller, B. G., Bradley Eitel, K., Eitel, J.U.H., Hougham, R.J. (2012). *Localizing Adventure Learning: Teachers and Students as Expedition Leaders and Members.* Proceedings of Society for Information Technology & Teacher Education International Conference 2012 (pp. 2164-2169). Chesapeake, VA.

### (ii) Five other significant products

- Miller, B. G., Doering, A., Roehrig, G., & Shimek, R. (2012). Fostering Indigenous STEM education: Mobilizing the adventure learning framework through snow snakes. *Journal of American Indian Education*, 51(2), 66-84.
- Eitel, K. B., Hougham, R. J., & Miller, B. G., Schon, J., & LaPaglia, K. (in press). Upload/download: Empowering students through technology-enabled problem-based learning. *Science Scope*.
- Miller, B. G., & Roehrig, G. (2013). Supporting science agency in American Indian students. Manuscript submitted for publication.
- Hougham, R. J., Miller, B. G., Cox, C. J., Walden, V. P., and Eitel, K. B. (2012). Communicating climate science to high school students in the Arctic: Adventure learning @ Greenland. *American Geophysical Union Fall Meeting*, San Francisco, 3 6 December 2012.
- Veletsianos, G., Miller, B. G., Eitel, K. B., Eitel, J., Hougham, R. J., and Hansen, D. (2013). Lessons learned from localizing adventure learning projects: Enabling small project approaches. Manuscript in preparation.

# (d) Synergistic Activities

PI of an EArly Concept Grants for Exploratory Research (EAGER) (NSF 1240700) project exploring the boundaries of education and outreach for Arctic atmospheric research using the Adventure Learning framework. As a result of this work the *Content, Transition, Inquiry, and Synthesis* 

(CoTIS) curriculum model was developed for future vetting through similarly situated Arctic and Antarctic research projects and their respective education and outreach needs.

PI of a Cyberinfrastructure Training, Education, Advancement, and Mentoring for Our 21<sup>st</sup> Century Workforce (CI-TEAM) (NSF OCI-1135577) project that will design and enact novel curricular innovations through the context of water content and the McCall Outdoor Science School. The AL approach presents a robust framework that will be used to connect students, teachers, parents, and content knowledge keepers with scientific inquiries in the areas of seasonal water science.

Curriculum developer and facilitator of a culturally based and integrate science, technology, engineering and mathematics curriculum for upper elementary/middle school American Indian youth. The curriculum was based on the traditional American Indian game of *snow snakes* which is played in the winter months by crafting a length of organic wood material (snow snake) using STEM understanding and then throwing it down and ice track with the farthest snow snake winning the competition. The curriculum contained three carefully integrated elements: (1) a culturally-based game, (2) an explicit integration of STEM content, and (3) a hybrid educational approach known as Adventure Learning (AL) which utilizes both online and face-to-face learning environments. The project was a collaboration between the University of Minnesota and schools from three tribal affiliations (White Earth, Leech Lake, and Fond du Lac) in Northern Minnesota

Co-PI of a research experience for teacher (RET) in engineering project funded by the NSF (#0502310) titled: *Inspiring Educators in Rural America through Research*. Through this project middle school and high school STEM teachers from throughout South Dakota were partnered with ongoing engineering research initiatives for the purpose of increasing STEM understanding with the intent to transfer/translate the experience to students in meaningful ways. In addition, an international RET project funded through supplement funding at Pontificia Universidad Catolica de Valparaiso, Chile. Through this project in-service STEM teachers from the United States were immersed into a culture, language and geography different from their own while at the same time immersed into the research environment of an electro-chemistry laboratory. Transfer of the experience back to students in the United States was a fundamental objective of the experience.

Adventurer and researcher for the GoNorth! Greenland 2010 project. This project was designed as an arctic dogsled expedition from Thule Air Base to NEEM ice core drilling station, approximately 300 miles. The project was intent on delivering authentic curricular experiences to students all over the world via satellite technologies. As an expedition team member I was responsible for scientific and traditional ecological knowledge (TEK) research; along with daily expedition duties. <a href="https://www.polarhusky.com">www.polarhusky.com</a>

### (e) Collaborators

Aaron Doering, University of Minnesota Anthony Albano, University of Nebraska Chris Cox, University of Idaho Crystal Kolden, University of Idaho George Veletsianos, University of Texas, Austin Gillian Roehrig, University of Minnesota Humberto Gomez, PUCV, Chile Jan Boll, University of Idaho Jan Eitel, University of Idaho

*Graduate Advisors*:

Gillian Roehrig, University of Minnesota Aaron Doering, University of Minnesota Bhaskar Upadhyay, University of Minnesota Tom Peacock, Winona State University Karla Eitel, University of Idaho Lee Vierling, University of Idaho Melissa Saul, University of Idaho R. Justin Hougham, University of Idaho Robb Winter, SDSM&T Robert Shimek, White Earth Nation Stephan Carlson, University of Minnesota Von Walden, University of Idaho

# Biographical Sketch:

University of Idaho, Department of Geography
Moscow, Idaho 83844-3021, <a href="mailto:rhougham@uidaho.edu">rhougham@uidaho.edu</a> www.uidaho.edu/alatui

#### (a) Professional Preparation

Indiana University	Cognitive Science	B.A. 2002
Washington State University	Education	M.Ed. 2005
Washington State University	Experiential Education	Ph.D. 2008
University of Idaho	Climate Change Education	2011-2013

# (b) Appointments

- 2011- Current Post Doctoral Fellow, NASA Global Climate Change Education, University of Idaho, Moscow, ID.
- 2011-Current Education Coordinator, Northwest Advanced Renewables Alliance, University of Idaho, McCall, ID.
- 2008-Current Adjunct Faculty, College of Education. University of Idaho, Moscow, ID.

# (c) Products

## (i) Five related publications

- **Hougham, R. J.,** Bradley Eitel, K., & Miller, B. G. (2013). *Technology-enriched STEM Investigations of Place: Using Technology to Extend the Senses and Build Connections to and between Places in Science Education.* Manuscript in review at the Journal of Geoscience Education.
- **Hougham, R. J.**, Schon, J.A., Bradley Eitel, K., & Hollenhorst, S.A. (2012). *Education at the Speed of Research: Communicating the Science of Biofuels*. Published Proceedings of the Sun Grant Initiative. New Orleans, LA.
- **Hougham, R. J.**, Eitel, K. B., & Miller, B. G. (2012). *AL@: Combining the strengths of adventure learning and place based education*. Manuscript in review for the CLEARING Compendium.
- Miller, B. G., Cox, C. J., Hougham, R. J., Walden, V. P., Eitel, K. B., and Albano, A. D. (2013). Adventure learning @ Greenland: An example of education and outreach for atmospheric research. Manuscript submitted for publication in the Bulletin of the American Meteorological Society.
- Veletsianos, G., Miller, B., Bradley Eitel, K., Eitel, J.U.H., **Hougham, R.J.** (2012). *Localizing Adventure Learning: Teachers and Students as Expedition Leaders and Members*. Proceedings of Society for Information Technology & Teacher Education International Conference 2012 (pp. 2164-2169). Chesapeake, VA.

### (ii) Five other significant products

**Hougham, R. J.**, Miller, B. G., Cox, C. J., Walden, V. P., and Eitel, K. B. (2012). Communicating climate science to high school students in the Arctic: Adventure learning @ Greenland. *American Geophysical Union Fall Meeting*, San Francisco, 3 - 6 December 2012.

- **Hougham, R. J.** & Watson, T.F. (2012) *Growing Change: Place-based Participatory Partnerships in Education* American Education Research Association, published in 2012 conference proceedings.
- Veletsianos, G., Miller, B. G., Eitel, K. B., Eitel, J., **Hougham, R. J.**, and Hansen, D. (2013). *Lessons learned from localizing adventure learning projects: Enabling small project approaches*. Manuscript in preparation.
- Eitel, K.B., **Hougham, R.J.**, Miller, B.G., Schon, J. & LaPaglia, K. (2012). *Upload/download: Empowering students through technology-enabled problem-based learning*. Science Scope. Manuscript accepted for publication.
- Miller, B. G., **Hougham, R. J.**, & Eitel, K. B. (2012). *Adventure learning in action: Practical enactment strategies for educators*. Accepted, in press at Tech Trends.

# (d) Synergistic Activities

- 1. Co-Coordinator, Idaho Geographic Alliance; National Geographic Society.
- 2. Coordinator of community and youth gardening projects; *Palouse Pollinators* and *Guerilla Gardening: Community Led Learning.*
- 3. *I-STEM: Idaho Science Technology Engineering and Math* strand provider for k-12 in-service teacher workshops. Idaho National Lab.
- 4. College of Education Innovation Award- *Urban-Rural-Tribal Intersection: A place-based* educational approach to learning science, technology, engineering, mathematics and community. 2010 & Adventure Learning (AL) to promote GreenSTEM education and physical activity in schools. 2011
- 5. Co-Founder *AL@: Education at the speed of Research*. Hybrid, online approach to communicating current scientific research, engaging classroom communities, and delivering cutting edge outreach from the field.

# (e) Current Collaborators

Christopher Cox (University of Idaho)

Kim Cristian (Washington State University)

Jan Eitel (University of Idaho)

Karla Eitel (University of Idaho)

Ed Galindo (University of Idaho)

Dane Hansen (University of Idaho)

Steve Hollenhorst (Western Washington University)

Crystal Kolden (University of Idaho)

Kirsten LaPaglia (University of Idaho)

Brant Miller (University of Idaho)

Melissa Saul (University of Idaho)

Jennifer Schon (University of Idaho)

George Veletsianos (University of Texas)

Von Walden (University of Idaho)

Lee Vierling (University of Idaho)

# **Graduate Advisors**

Eric Anctil (University of Portland)

Willie Higgins (University of Delaware)

David Greenwood (Lakehead University)