Marie-Claire Shanahan

Associate Professor, Learning Sciences
Werklund School of Education, University of Calgary
2750 University Way NW Calgary, AB T2N 1N4
Email: mc.shanahan@ucalgary.ca

EDUCATION

2007 Doctor of Philosophy, Curriculum, Teaching and Learning
Dissertation: *Playing the role of a science student: Exploring factors and patterns in science student identity formation*
University of Toronto (OISE/UT)

2003 Master of Arts, Science Education
Thesis: *Creative activities and their influence on identity formation in science*
University of Toronto (OISE/UT)

2000 Bachelor of Education
Secondary Physics and Mathematics Education
Queen's University at Kingston, Ontario

1999 Bachelor of Science (Mechanical Engineering)
Honours thesis: *Oriented polymers and applications to bicycle helmet design*
Queen's University at Kingston, Ontario

ACADEMIC APPOINTMENTS

2021-ongoing Professor, Learning Sciences
Werklund School of Education, University of Calgary

2015-2021 Associate Professor, Learning Sciences,
Werklund School of Education, University of Calgary

2013-2015 Research Chair in Science Education and Public Engagement, Associate Professor
Werklund School of Education, University of Calgary

2012-2013 Associate Professor, Science Education
Department of Secondary Education, University of Alberta

2011-2012 Associate Professor, Science Education
Department of Elementary Education, University of Alberta

2007- 2011 Assistant Professor, Science Education
Department of Elementary Education, University of Alberta

AWARDS

2019 Paul D. Fleck Fellowship for unique achievements and innovation in the arts community, Banff Centre for Arts and Creativity
2017 Werklund School of Education, Distinguished Research Lecture Award
2016 University of Calgary Students' Union Teaching Excellence Award
2016 Best paper, 4th International STEM in Education Conference, Beijing, China.
2012 Finalist for the American Association for the Advancement of Science Early Career Award for Public Engagement with Science
2010 International Committee Early Career Scholar, National Association for Research in Science Teaching
2007 Outstanding Graduate Research Award, American Educational Research Association - Science, Teaching and Learning Special Interest Group

RESEARCH FUNDING

2020 Project title: Improving the ability of science and technology researchers to communicate using skills from arts and social sciences (Co-Investigator)
Funded by: Social Sciences and Humanities Research Council, $73,791
Principal Investigator: Dr. Jeffrey Dunn, Cumming School of Medicine

2019 Project title: Disability, Augmentative and Alternative Communication (AAC) and Science Education (Principal Investigator)
Funded by: Social Sciences and Humanities Research Council, $57,790
Co-investigator: Dr. Pratim Sengupta, Werklund School of Education

2018 Project title: Improving the research consent process to build partnership relationships with undiagnosed patients and caregivers (Principal Investigator)
Funded by: Rare Disease Foundation, BC Children's Hospital Foundation, $4,866
Co-investigator: Maryam Hachem, Werklund School of Education

2018 Project title: Measuring Cross-Curricular Competencies using Digitally Simulated Science Laboratories (Co-Investigator)
Funded by: Social Sciences and Humanities Research Council, $74,675
Principal Investigator: Dr. Man-Wai Chu, Werklund School of Education

2018 Project title: Rethinking transdisciplinarity in STEM Education (Co-Investigator)
Funded by: Office of Research, Research Mentorship & Collaboration Grant, $7,467
Principal Investigator: Dr. Miwa A. Takeuchi, Co-Investigators: Drs. Pratim Sengupta, Jennifer Adams, Werklund School of Education

2016 Project title: NIC-STEM: Narratives, Identity and Computing in STEM (Co-Investigator)
PI: Dr. Pratim Sengupta; CI: Dr. Beaumie Kim, Werklund School of Education
Funded by: University of Calgary Teaching and Learning Grants, $40,000

2013 Project title: ISSET Outreach and Space Academy (Applicant)
Funded by: Natural Science and Engineering Research Council – PromoScience, $39,900
Co-applicant: Dr. Ian Mann, University of Alberta (Role of project lead transferred to Dr. Mann upon leaving institution)

2011 Project title: Future Science Leaders: Challenging identities through online and in-person interactions with peers and mentors (Principal Investigator)
Funded by: Faculty of Education Support for the Advancement of Scholarship, $6,000
Co-Investigator: Dr. Catherine Anderson, University of British Columbia

2009 Project title: Creating science through discourse: Exploring the use of language to establish the social structure of the science classroom (Principal Investigator)
Funded by: Social Sciences and Humanities Research Council, $105,305

2009 Project title: Reading scientific text: Exploring readers' encountered difficulties and enacted strategies (Principal Investigator)
Funded by: Natural Sciences and Engineering Research Council - Centre for Research in Youth, Science, Teaching and Learning (CRYSTAL-Alberta), $24,760

2008 Project title: Teaching and Learning Scientific Language though Hybrid Adapted Primary Literature (Principal Investigator)
Funded by: Natural Sciences and Engineering Research Council - Centre for Research in Youth, Science, Teaching and Learning (CRYSTAL-Alberta), $22,064

2008 Project title: Reading for evidence: Creating and pilot testing text resources for Grade 6 students (Principal Investigator)
Funded by: Natural Sciences and Engineering Research Council - Centre for Research in Youth, Science, Teaching and Learning (CRYSTAL-Alberta), $5,550

2007 Project title: Becoming experts: Exploring elementary preservice teachers' identity development as science specialists (Principal Investigator)
Funded by: Faculty of Education Support of the Advancement of Scholarship, $3,000
Co-Investigator: Dr. Brenda Gustafson, University of Alberta

2007 Project title: Using visualizations to understand the particulate model of matter: Conceptions of Grade 5 children (Co-Investigator)
Funded by: Natural Sciences and Engineering Research Council - Centre for Research in Youth, Science, Teaching and Learning (CRYSTAL-Alberta), $7,800
Principal Investigator: Dr. Brenda Gustafson, University of Alberta

REFEREED PUBLICATIONS

Academic Journals

*****denotes graduate student or postdoctoral fellow author

*Hladik, S., **Shanahan, M.-C.,** & Sengupta, P. (under review). Improvisational infrastructuring by facilitators in public computing: negotiating figured worlds and institutional norms. *Cognition & Instruction.*

*Simms, W., & **Shanahan, M.-C.** (under review). Qualitatively identifying the dimensions of environmental identity development within the classroom context. *Journal of Research in Science Teaching.*

Sengupta, P., *Chokshi, A., *Helvaci Ozacar, B., *Dutta, S., *Sanyal, M., & **Shanahan, M.-C.** (2022). Language and symbolic violence in computational models of ethnocentrism: A critical phenomenology and Southern re-orientations. *International Journal of Qualitative Studies in Education*, 1-20.

Takeuchi, M. A., Sengupta, P., **Shanahan, M.-C.**, Adams, J. D., & *Hachem, M. (2020). Transdisciplinarity in STEM education: a critical review. *Studies in Science Education*, 56(2), 213-253.

Shanahan, M. C., & *****Bechtel, R. (2020). "We're taking their brilliant minds": Science teacher expertize, meta-discourse, and the challenges of teacher–scientist collaboration. *Science Education, 104*(2), 354-387.

*Simms, W., & **Shanahan, M.-C.** (2019). Using reflection to support environmental identity development in the classroom context. *Environmental Education Research*, 1-25.

Sengupta, P., Brown, B., Rushton, K., & **Shanahan, M. C.** (2018). Reframing coding as "Mathematization" in the K–12 classroom: Views from teacher professional learning. *Alberta Science Education Journal, 45*(2), 28-36

Sengupta, P. & **Shanahan, M.-C.** (2017). Boundary Play and Pivots in Public Computation: New Directions in Integrated STEM Education. *International Journal of Engineering Education*.

Shanahan, M.-C. & *Burke, L, (2017). Video analysis of role and identity in science classrooms through student and teacher pronoun use. *SAGE Research Methods Cases*. 10.4135/9781473970571

Shanahan, M.-C., *Burke, L. E. C.-A., & Francis, K. (2016). Using a boundary object perspective to reconsider the meaning of STEM in a Canadian context. *Canadian Journal of Science, Mathematics and Technology Education, 16,*129-139.

Brinkworth, J.F., & **Shanahan, M.-C.** (2015). Surviving the Sexodus Project: How STEM Women Approach Career Challenges. *Journal of the Federation of American Societies for Experimental Biology,* 29(1), Supplement 9.3.

*Vergis, E., Wimmer, R.**, & Shanahan, M.-C.** (2014). The role of concepts of evidence in the teaching of science. *Alberta Science Education Journal.*

*Delos Santos, J., & **Shanahan, M.-C.** (2012). Using online comments to explore public reaction to the oil sands monitoring plan announcement: An argumentation analysis. *Journal of Activist Science Education, 4*(1), 1-42.

Shanahan, M.-C. (2011). Science blogs as boundary layers: Creating and understanding new interactions through science blogging. *Journalism: Theory, Practice and Criticism, 12,* 903–919.

Shanahan, M.-C., & Nieswandt, M. (2011). Science student role: Evidence of social structural norms specific to high school science. *Journal of Research in Science Teaching, 48,* 367–395.

Shanahan, M.-C., Pedretti, E., DeCoito, I., & Baker, L. (2011). Exploring the responses of underrepresented students in science to an elementary outreach program. *School Science and Mathematics, 111,* 131-142.

Gustafson, B. J., & **Shanahan, M.-C.** (2010). Children thinking about models: Analyzing a globe. *Alberta Journal of Educational Research, 56,* 436-458.

Gustafson, B. J., **Shanahan, M.-C.**, & Gentilini, S. (2010). Elementary children's shifting views of models and the nature of matter. *Canadian Journal of Science Mathematics and Technology Education, 10,* 103-122.

Hazari, Z., Sadler, P. M., Sonnert, G., & **Shanahan, M.-C.** (2010). Connecting high school physics experiences, outcome expectations, physics identity, and physics career choice: A gender study. *Journal of Research in Science Teaching, 47,* 978–1003.

Shanahan, M.-C. (2010). Changing the meaning of peer-to-peer?: Exploring online comment spaces as sites of negotiated expertise. *Journal of Science Communication, 9*(1), 1-13.

Shanahan, M.-C. (2009). Identity in science learning: Exploring the attention given to agency and structure in studies of identity. *Studies in Science Education, 45,* 43-64.

Shanahan, M.-C., *de los Santos, J., & *Morrow, R. (2009). Hybrid adapted primary literature: A strategy to support students in reading about scientific inquiry. *Alberta Science Education Journal, 40,* 20-26.

Shanahan, M.-C., & Nieswandt, M. (2009). Creative activities and their influence on identity interactions in science: Three case studies. *Journal of Elementary Science Education, 21*(3), 63-79.
Selected by the Association for Science Teacher Education and the National Science Teachers Association (NSTA) 2010 NSTA "Research Worth Reading" list.

Nieswandt, M., & **Shanahan, M.-C.** (2008). "I just want the credit!": Perceived instrumentality as the main characteristic of boys' motivation. *Research in Science Education, 38,* 3-29.

Gustafson, B.J., & **Shanahan, M.-C.** (2007). Supporting inquiry in elementary classrooms: The role of scientific argument. *Alberta Science Education Journal, 38,* 11-16.

Authored Books

Gustafson, B., Pegg, J., & **Shanahan, M.-C.** (2013). *Science for elementary school teachers: Concepts, explanations, and activities.* Victoria, BC: Ripon Publishing.

Edited Books

Shanahan, M.-C., Kim, B., Koh, K., Preciado-Babb, A., Takeuchi, M., Sengupta, P. *(*In Press*). The Learning Sciences in Conversation: Theories, Methodologies, and Boundary Spaces*. Routledge.

Sengupta, P., **Shanahan, M.-C.**, & Kim, B. (2019). *Critical, Transdisciplinary and Embodied Approaches in STEM Education*. Springer.

Book Chapters

Pegg, J., Wiseman, D., *Brown, C., & **Shanahan, M.-C.** (2019). Science Education in Alberta: A Complex History of Shifting Educational Influences. In C. Tippett & T. Milford (Eds.*). Science Education in Canada*. Springer.

Sengupta, P., **Shanahan, M.-C.**, & Kim. B. (2019). Reimagining STEM Education: Critical, Transdisciplinary, and Embodied Approaches. In: Sengupta, P., Shanahan, M.-C., & Kim, B. (Eds.) *Critical, Transdisciplinary and Embodied Approaches for STEM Education* (pp. 3-19). Springer: New York, NY.

Sengupta, P., Kim. B., & **Shanahan, M.-C.**, (2019). Transdisciplinarity, Embodiment and Critical Perspectives: A Framework for Critical STEM Literacies. In: Sengupta, P., Shanahan, M.-C., & Kim, B. (Eds.) Critical, Transdisciplinary and Embodied Approaches for STEM Education (pp. 177-195). Springer: New York, NY.

Shanahan, M.-C. (2016). Blogging as a resource and site for science education. C. Wilcox, J. G. Goldman & B. Brookshire (Eds.) *The Complete Guide to Science Blogging.* Yale University Press.

Shanahan, M.-C. (2015). When science changes: The impact of widespread digital communications on reaching science education goals. In D. Corrigan, C. Buntting, J. Dillon, A. Jones, R. Gunstone, (Eds.) *The Future in Learning Science: What's in it for the learner?* (pp. 61-82). Berlin: Springer.

Shanahan, M.-C. (2012). Reading for evidence in hybrid adapted primary literature. In S. P. Norris (Ed.) *Reading for evidence and interpreting visualizations in mathematics and science education* (pp. 41-63). Rotterdam, The Netherlands: Sense Publishers

Gustafson, B.J., & **Shanahan, M.-C.** (2010). Curriculum development in Canada. In J. Kirylo & A. Nauman (Eds.), *Curriculum Development: Perspectives from Around the World* (pp. 74-89). Association for Childhood Education- ACEI.

Shanahan, M.-C. (2009). Activity Theory. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.) *Encyclopedia of case study research* (pp. 5-8). Thousand Oaks, CA: Sage.

Shanahan, M.-C. (2009). Cross-sectional design. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.) *Encyclopedia of case study research* (pp. 267-268). Thousand Oaks, CA: Sage.

Publishing Proceedings

Hladik, S., **Shanahan, M.-C.**, & Sengupta, P. (2021). Centering Praxis in Design-Based Research: Insights from an Informal STEM Research Practice Partnership. In *Proceedings of the 15th International Conference of the Learning Sciences-ICLS 2021*. International Society of the Learning Sciences.

Berland, M., de Royston, M. M., Lyons, L., Kumar, V., Hansen, D., Hooper, P., Lindgren, R., Planey, J., Quigley, K., Thompson, W., Beheshti, E., Uzzo, S., *Hladik, S., *Ozacar, B. H., **Shanahan, M.-C.**, Sengupta, P., Ahn, J., Bonsignore, e., Kraus, K., Kaczmarek-Frew, K., & Booker, A. (2020). Reframing Playful Participation in Museums: Identity, Collaboration, Inclusion, and Joy. *In Gresalfi, M. and Horn, I. S. (Eds.), The Interdisciplinarity of the Learning Sciences, Proceedings of the 14th International Conference of the Learning Sciences (ICLS) 2020*, Volume 3 (pp. 1503-1510). Nashville, Tennessee: International Society of the Learning Sciences.

*Hladik, S., **Shanahan, M.-C.**, & Sengupta, P. (2020). Improvisational Infrastructuring by Facilitators in Public Computing. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, Proceedings of the 14th International Conference of Learning Sciences* (ICLS) 2020, Volume 2 (pp. 807-808). Nashville, Tennessee: International Society of the Learning Sciences.

*Ozacar, B. H., *Hladik, S., **Shanahan, M.-C.,** & Sengupta, P. (2020). Centering and Decentering Participation in Public Computing Through Co-operative Action. *In Gresalfi, M. and Horn, I. S. (Eds.), The Interdisciplinarity of the Learning Sciences, Proceedings of the 14th International Conference of the Learning Sciences (ICLS) 2020*, Volume 1 (pp. 246-253). Nashville, Tennessee: International Society of the Learning Sciences.

*Paré, D., **Shanahan, M.-C.**, & Sengupta, P. (2020). Queering complexity using multi-agent simulations. In Gresalfi, M. and Horn, I. S. (Eds.), *The Interdisciplinarity of the Learning Sciences, Proceedings of 14th International Conference of the Learning Sciences (ICLS) 2020*, Volume 3 (pp. 1397-1404). Nashville, Tennessee: International Society of the Learning Sciences.

Takeuchi, M. A., Adams, J., Alley, Z., Baker, K., Gutiérrez, K., Lehrer, R., Leyva, L., Rahm, J., Sengupta, P., **Shanahan, M.-C.**, Tagalik, S., Yin, P., & Kayumova, S. (2020). Rethinking Transdisciplinarity in the Learning Sciences: Critical and Emergent Perspectives. In Gresalfi, M. and Horn, I. S. (Eds.), The Interdisciplinarity of the Learning Sciences, 14th International Conference of

the Learning Sciences (ICLS) 2020, Volume 3 (pp. 1463-1470). Nashville, Tennessee: International Society of the Learning Sciences.

Uttamchandani, S., Shrodes, A., Lizarraga, J., Cortez, A., *Paré, D., **Shanahan, M.-C.**, Sengupta, P., Bang, M., & Hoadley, C. (2020). Attending to Gender and Sexuality in Learning: Lessons From Scholarship By, For, and With LGBTQ+ People. *In Gresalfi, M. and Horn, I. S. (Eds.), The Interdisciplinarity of the Learning Sciences, Proceedings of the 14th International Conference of the Learning Sciences (ICLS) 2020*, Volume 1 (pp. 358-365). Nashville, Tennessee: International Society of the Learning Sciences.

Adams, J. D., Barma, S., Vincent, M., Voyer, S., Rahm, J., Touioui, F., Sengupta, P., **Shanahan, M.-C.**, Hladik, S., Paré, D., Chaffee, R., Luehmann, A., Greenberg, D., Thompson, J., Haganah, S., Barton, A. C., & O'Connor, K. (2018). Unpacking signs of learning in complex social environments: Desettling neoliberal market-driven educational methodologies, epistemologies and recognitions of learning. In Kay, J. and Luckin, R. (Eds.*) Rethinking Learning in the Digital Age: Making the Learning Sciences Count, Proceedings of the 13th International Conference of the Learning Sciences (ICLS) 2018*, Volume 2. London, UK: International Society of the Learning Sciences.

Francis, K., Yáñez, G. A., Chapman, O., Cherkowski, G., Dodsworth, D., Friesen, S., ... & Takeuchi, M. (2018). Forming and transforming STEM teacher education: A follow up to pioneering STEM education. In *2018 IEEE Global Engineering Education Conference (EDUCON)* (pp. 686-693). IEEE.

Sengupta, P., & **Shanahan, M.-C.** (2016). STEM as Public Computation and Boundary Play. *Proceedings of the 4th International STEM in Education Conference*, Beijing, China. [Awarded "*Best Paper, STEM 2016*]

Book Reviews

Shanahan M.-C. Commentary For: Imagining tomorrow's university in an era of open science [version 2; referees: 3 approved]. F1000Research 2017, 6:405 (doi: 10.5256/f1000research.12118.r22286

Shanahan, M.-C. (2014). Commentary For: Connecting undergraduate science education with the needs of today's graduates [v1; ref status: indexed, http://f1000r.es/4pl] *F1000Research* 2014, 3(279). doi: 10.5256/f1000research.6105.r6827

Shanahan, M.-C. (2012). [Review of the book *A short history of physics in the American century*]. *Science Education, 96*(6), 1134-1135.

Shanahan, M.-C. (2011). Nature study as an object lesson for science education [Review of the book *Teacher children science: Hands-on nature study in North America 1890-1930*]. *Science as Culture, 20*, 535-540.

Shanahan, M.-C. (2008). [Review of the book *Science, Learning, Identity: Sociocultural and cultural-historical perspectives*.] *The Alberta Journal of Educational Research, 54*(3), pp. 359-362.

OTHER REFEREED CONTRIBUTIONS

Scholarly Presentations

*Hladik, S., *Ozacar, B., Shanahan, M. & Sengupta, P. (2020, Apr 17 - 21) *Shaping the Experience of Public Computing Using Physical Blocks* [Roundtable Session]. AERA Annual Meeting San Francisco, CA (Conference Canceled).

*Hladik, S., Shanahan, M. & Sengupta, P. (2020, Apr 17 - 21) *The Need for Intersectional Feminist Design in Computing Education* [Poster Session]. AERA Annual Meeting San Francisco, CA (Conference Canceled).

*Ozacar, B., Hladik, S., Shanahan, M. & Sengupta, P. (2020, Apr 17 - 21) *"Who" Is Coding? Coding Science in Museums as Cooperative Action* [Roundtable Session]. AERA Annual Meeting San Francisco, CA (Conference Canceled).

Chu, M.-W., **Shanahan, M.-C.,** Alonso Yanez, G., Quarrington, C., Zwicker, M., Fritz, J.A., Moorman, L., & MacDonald, D. (2017, May). Understanding the State of STEM, Innovation, and

Entrepreneurship Education. Paper presented at the Canadian Society for the Study of Education, Toronto, ON.

Shanahan, M.-C., & Sengupta, P. (2017). Recoding figured worlds: Science, play and public computing. Paper presented at the Canadian Society for the Study of Education, Toronto, ON.

Sengupta, P., Beaulieu, d., **Shanahan, M.-C.**, Sandberg, W. (2017, May). Beyond Instrumental Clichés: Conceptual Art and the Aesthetics of Computing in Public. Paper presented at the Canadian Society for the Study of Education, Toronto, ON.

*Urueta, T., *Raisinghani, L., *Valdez, J., **Shanahan, M.-C.**, Ng, D. (2017, May). Bridging the gap between science and creativity through the science creative literacy symposia. Paper presented at the Canadian Society for the Study of Education, Toronto, ON.

Shanahan, M.-C. & Burke, L. E. C.-A. (2016, May). The exclusionary function of inclusive language: Reinforcing science student role perceptions. Paper presented at the Canadian Society for the Study of Education, Calgary, AB.

*Ng, E., & **Shanahan, M.-C.** (2016, May). Working from teacher needs to design APL resources for teaching the Nature of Science. Paper presented at the Canadian Society for the Study of Education, Calgary, AB.

Shanahan, M.-C. & Burke, L. E. C.-A. (2016, April). "I'm curious…": A critical analysis of pronoun use in the co-construction of science student identities. Paper presented at the American Educational Research Association, Washington, D.C.

Shanahan, M.-C. & Burke, L. E. C.-A. (2015, June). Elementary students talk: Identifying with the role of a good science student. Paper presented at the Canadian Society for the Study of Education, Ottawa, ON.

Pegg, J., & **Shanahan, M.-C.** (2015, April). Expertise and Boundary Objects in Teacher-Scientist Partnerships: A Comparative Case Analysis. Paper presented at the National Association for Research in Science Teaching, Chicago, IL.

Shanahan, M.-C. & Lachapelle, C. (2015, April). Characterizing Quality Research in Engineering Education. Panel presentation for Engineering Education Research Group of the National Association for Research in Science Teaching. Chicago, IL.

Shanahan, M.-C. & *Burke, L. E. C.-A. (2015, April). Embedded Meanings in Pronoun Use: Defining Science Student Identities. Paper presented at the American Educational Research Association, Chicago, IL.

*Burke, L. E. C.-A., Francis, K., & **Shanahan M.-C.** (2014, July). A horizon of possibilities: A definition of STEM education. Paper presented at the STEM 2014 Conference, Vancouver, BC

Shanahan, M.-C., & Nieswandt, M. (2013, April). Extending the analysis of student role identities across geographical and subject area boundaries. Paper presented at the National Association for Resarch in Science Teaching, Rio Grande, Puerto Rico.

de la Giroday, M., **Shanahan, M.-C.**, Strauss, S., Didow, A., Annan, R., & Stillwell, M. (2012, November). Thinking Big: Science Culture and Policy in Canada. Presentation at the Canadian Science Policy Conference, Calgary, Alberta.

Pegg, J., & **Shanahan, M.-C.** (2012, April). Expertise in scientist-teacher partnerships. Paper presented at the American Educational Research Association, Vancouver, BC.

Shanahan, M.-C. (2011, September). Exploring the influence of student-teacher interactions on role understandings. Paper presented at the meeting of the European Science Education Research Association, Lyon, France.

*Bechtel, R., & **Shanahan, M.-C.** (2011, June). Unravelling the complexities of adapting scientific texts. Paper presented at the meeting of the Canadian Society for the Study of Education, Fredericton, NB.

Shanahan, M.-C., *Bechtel, R., & *Henkelman, G. (2011, June). Exploring the science student role in a discrepant environment. Paper presented at the meeting of the Canadian Society for the Study of Education, Fredericton, NB.

Shanahan, M.-C. (2011, April). Exploring the challenges of institutional mandating of expertise recognition. Paper presented at Extending expertise?: Experts and Amateurs in Communication and Culture conference, Ottawa, ON.

Shanahan, M.-C., *Bechtel, R., & *Henkelman, G. (2011, April). The science student role: Exploring its creation and enactment through discourse. Paper presented at the meeting of the National Association for Research in Science Teaching, Orlando, FL.

Shanahan, M.-C. (2010, August). Expertise and intertextuality in online comment spaces. Paper presented at the meeting of the Society for Social Studies of Science, Tokyo, Japan.

Shanahan, M.-C. (2010, May). Scientization in writing: A key to gaining credibility for those with personal expertise? Paper presented at the meeting of the Canadian Association for Studies in Discourse and Writing, Montreal, QC.

Shanahan, M.-C., *Bechtel, R., & *Henkelman, G. (2010, May). Reproducing the science student role: Representation and enactment in student discourse. Paper presented at the meeting of the Canadian Society for the Study of Education, Montreal, QC.

Sonnert, G., Hazari, Z., Sadler, P.M., & **Shanahan, M.-C.** (2010, May). High school physics experiences, physics identity, and gender. Paper presented at the National Center for Women & Information Technology Summit on Women and IT, Portland, OR.

Shanahan, M.-C. (2010, March). Exploring ideas of representation by epistemological language and scientific meta-language in hybrid adapted primary literature. Poster presented at the meeting of the National Association for Research in Science Teaching, Philadelphia, PA.

Shanahan, M.-C., & *Bechtel, R.E. (2010, March). "We are taking their brilliant minds": Exploring the use of linguistic devices to mark expertise in a scientist-teacher collaboration. Paper presented at the meeting of the National Association for Research in Science Teaching, Philadelphia, PA.

Shanahan, M.-C., *de los Santos, J., *Morrow, R. (2009, May). Hybrid adapted primary literature as a language-based strategy for teaching about science and scientists. Paper presented at the meeting of the Canadian Society for the Study of Education, Ottawa, ON.

*Bechtel, R.E., & **Shanahan, M.-C.** (2009, May). The use of language to construct expertise in a collaborative group of scientists and science teachers. Paper presented at the meeting of the Canadian Society for the Study of Education, Ottawa, ON.

Shanahan, M.-C., de los Santos, J., Morrow, R. (2009, April). Learning about science and scientists through hybrid adapted primary literature. Paper presented at the meeting of the American Educational Research Association, San Diego, CA.

Shanahan, M.-C., & Gustafson, B. J. (2008, October). Becoming experts: Exploring elementary preservice teachers' identity development as science specialists. Paper presented at the meeting of the International Society for the Scholarship of Teaching and Learning, Edmonton, AB.

Shanahan, M.-C., *Morrow, R., *Zolinsky, D., *Hlusack, J. (2008, September). Reading for evidence: Creating and pilot testing text resources for Grade 6 science. Paper presented at the Centre for Research in Youth Science Teaching and Learning National Conference. Sherbrooke, QC.

Pedretti, E., DeCoito, I. **Shanahan, M.-C**., *Baker, L. (2008, June). Embedding Professional Development in the Elementary Science Classroom through an Outreach Program. Paper presented at the meeting of the Canadian Society for the Study of Education, Vancouver, BC.

Shanahan, M.-C. (2008, June). What does it mean to be a science person?: Exploring the meaning and impact of identity development in science. Paper presented at the meeting of the Canadian Society for the Study of Education, Vancouver, BC.

Shanahan, M.-C., & Pedretti, E. (2008, March). Making a case for continued funding of science outreach programs through exploring the affective responses of underrepresented students. Paper presented at the meeting of the American Educational Research Association, New York, NY.

Gustafson, B. J., & **Shanahan, M.-C.** (2008, March). Initial pathways to teaching elementary children about scientific models. Paper presented at the meeting of the American Educational Research Association, New York, NY.

Shanahan, M.-C., & Nieswandt, M. (2007, April). A science student is expected to be smart: Modelling students' understanding of the expectations of the science student role. Paper presented at the meeting of the American Educational Research Association, Chicago, IL.

Pedretti, E., Baker, L., De Coito, I. & **Shanahan, M.-C.** (2007, April). A large scale study of *Scientists in School* outreach program: Enhancing Student Learning and Teacher Professional Development in Science and Technology. Paper presented at the meeting of the American Educational Research Association, Chicago, IL.

Shanahan, M.-C., Pedretti, E., Baker, L., & De Coito, I. (2007, April). Improving underrepresented students' affective response to science through a hands-on outreach program. Paper presented at the meeting of the National Association for Research in Science Teaching, New Orleans, LA.

Shanahan, M.-C., & Nieswandt, M. (2006, April). Exploring the Reflection of Preservice Teachers' Beliefs About the Nature of Science on Their Teaching Priorities. Paper presented at the meeting of the American Educational Research Association, San Francisco, CA.

Shanahan, M.-C. (2006, April). Self-regulatory techniques and understanding: A case study of success. Paper presented at the meeting of the National Association for Research in Science Teaching, San Francisco, CA.

Nieswandt, M., **Shanahan, M.-C.**, & Sharkawy, A. (2006, April). Argumentation as a means of challenging secondary preservice science teachers' epistemological beliefs. Paper presented at the meeting of the American Educational Research Association, San Francisco, CA.

Nieswandt, M., & **Shanahan, M.-C.** (2005, April). "I just want the credit!": Perceived instrumentality as the main characteristic of boys' motivation. Paper presented at the meeting of the American Educational Research Association, Montréal, QC.

Shanahan, M.-C. (2005, May). Exploring teachers' beliefs and tacit knowledge about girls' learning. Paper presented at the meeting of the Canadian Society for the Study of Education, London, ON.

Gagné, M.-C. (2004, June). Creative activities and their influence on identity interactions in science. Paper presented at the meeting of the Jean Piaget Society, Toronto, ON.

Gagné, M.-C. (2004, April). Exploring the effects of creative activities in science: A cross-gender study. Paper presented at the meeting of the National Association of Research in Science Teaching, Vancouver, BC.

Gagné, M.-C. (2003, August). Creative activities as a way of helping more individuals feel comfortable with their identity as science students. Paper presented at the meeting of the European Science Education Research Association, August 19-23, Noordwijkerhout, Netherlands.

OTHER SCHOLARLY PUBLICATIONS AND PRESENTATIONS

Invited Presentations and Keynote Addresses

Kachur, T., **Shanahan, M.-C.**, McRae, P. (2018, October). Keynote panel session. Geeks Unite 2.0: Conference of the Mathematics & Science Councils of the Alberta Teachers' Association, October 20, 2018.

Sengupta, P., **Shanahan, M.-C.**, & Kim, B. (2017, September). Play, Code & Science. Invited public lecture, Alumni Weekend, University of Calgary, Canada.

Shanahan, M.-C. (2016, April). Learning to say no and dealing with bias, obstacles and setbacks. NSERC Women in Science and Engineering National Promotion Workshop. April, 28, 2016, Calgary, AB.

Farenhorst, A., Hill, J., Rigg, L., Ronsky, J., Rosehart, W., **Shanahan, M.-C.**, Shannon, L., Vamosi, S., Williamson, C., & Wirasinghe, C. (2016, April). Career Advancement in Academia. NSERC Women in Science and Engineering National Promotion Workshop. April, 28, 2016, Calgary, AB.

Shanahan, M.-C. (2014, March). Looking beyond grades and abilities for why students choose to take or choose to leave science in high school and university**.** University of Calgary Faculty of Science, Science Education Lecture Series.

Shanahan, M.-C. (2013, May). Science online: Blogging, social media. Invited session for the University of Toronto Science Leadership Program.

Shanahan, M.-C. (2013, April). Role identity and choosing science: What are the consistencies and discrepancies across age, region and subject area? Invited colloquium Department of Engineering and Science Education, Clemson University.

Shanahan, M.-C. (2012, June). Studying identity: Gaining perspective from multiple methods. Invited talk for the Scandinavian Science Identity Seminar, University of Copenhagen.

Shanahan, M.-C., & Anderson, C. (2012, June). Taking online outreach beyond conveying facts. Invited session at BrainSTEM: Perimeter Institute of Theoretical Physics expert workshop on digital science outreach.

Shanahan, M.-C. (2012, June). Research-powered outreach. Invited session at BrainSTEM: Perimeter Institute of Theoretical Physics expert workshop on digital science outreach.

Shanahan, M.-C. (2012, June). Examining identity, gender and persistence in high school and undergraduate physics. Invited lecture at the Congress of the Canadian Association of Physicists, sponsored by the Committee to Encourage Women in Physics.

Shanahan, M.-C. (2012, June). Gender and physics: Current research on classroom and teacher influences. Workshop presentation at the Congress of the Canadian Association of Physicists, High School Physics Teachers' Day.

Shanahan, M.-C. (2011, November). Identity, gender and persistence in science. TRIUMF: Canada's particle accelerator centre, Vancouver, BC (Invited colloquium).

Shanahan, M.-C. (2011, September). Identity: Why is it important to think about how women and girls see themselves in science and engineering**.** Live webinar hosted and presented for the Women in Engineering Pro-Active Network (WEPAN). (Invited session)

Shanahan, M.-C. (2010, September). Creating science through discourse. Edmonton Child Study Centre research colloquium, Edmonton, AB (Invited colloquium)

Shanahan, M.-C. (2010, March). Using reading to support and encourage student inquiry in science. Canadian Centre for Research on Literacy. (Invited seminar)

Shanahan, M.-C. (2010, January) What does research in scientific language have to offer to teachers? Edmonton Catholic Schools, Regional Science Teachers Conference. (Invited session)

Shanahan, M.-C. (2009, May) Science and science students in the 21st century. Alberta Teachers' Association, Chemistry and Biology Regional Conference. (Keynote address)

Professional and Practitioner Publications

Delos Santos, J., Chu, M.-W., & **Shanahan, M.-C.** (2017). The outdoors as a high school science classroom. *Green Teacher*. 1-9.

Shanahan, M.-C. & Hazari, Z. (2011). Author responses: Can we declare victory for women in their participation in science? *American Physical Society News, 20*(8), 8.

Shanahan, M.-C. & Hazari, Z. (2011). Can we declare victory for women in their participation in science? *American Physical Society News, 20*,(6), 9.

Shanahan, M.-C. (2010). Reading like a scientist: Students evaluate the quality of a scientific study. *Science and Children, 48*(1), 42-46.

Gagné, M.-C. (2001). Food, fractions and fun. *Ontario Association of Math Educators (OAME) Gazette*, 39(4), 16-17.

Reports

Sengupta, P. & **Shanahan, M.-C.** (2017). *Open Science, Public Engagement and the University*. White Paper commissioned by National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign for the NIH- NSF-funded initiative Imagining Tomorrow's University: Rethinking scholarship, education, and institutions for an open, networked era.

Shanahan, M.-C. (2008). *Teaching students to read scientific text*. Report prepared for the Alberta Education, Elementary Science Program of Studies Committee.

Pedretti, E., Baker, L., De Coito, I. & **Shanahan, M.-C.** (2007). *Scientists in School impact study*. Toronto, Ontario, Canada: Ontario Institute for Studies in Education of the University of Toronto, Centre for Science, Mathematics and Technology Education.

Public, Professional and Outreach Presentations

Chu, M.-W., **Shanahan, M.-C.**, Alonso-Yanez, G., Moorman, L., Fritz, J.-A., & Walton, C. (2016, May). World Café-Style Discussion of Innovation and Entrepreneurship Education. IDEAS: Designing for Innovation, University of Calgary, Calgary, AB.

Raisinghani, L., Valdez, J., Urueta-Ortiz, T., Ng, D., & **Shanahan, M.-C.** (2016, May). Science Creativity Literacy Symposium: Impact on Students' Perceptions of Science and Creativity. Presentation at Investigating Our Practices: Professional Development for Educators, University of British Columbia, Vancouver, BC.

Ng, E., & Shanahan, M.-C. (2015, October). Using Adapted Primary Literature to Foster Nature of Science Understanding. Presentation at the Alberta Teachers' Association Science Council Conference, Edmonton, AB.

Pegg, J., & **Shanahan, M.-C.** (2015, September). Recommendations for Creating and Supporting Meaningful Teacher-Scientist Partnerships. Presentation at the 2nd International Festival of Science, Technology, Engineering and Mathematics, Saskatoon Saskatchewan.

Shanahan, M.-C. (2014, April). The importance of parents. Horizon of Possibilities, IOSTEM Parents Symposium.

Shanahan, M.-C., & Finke, E. (2013, February). Formal science education, informal science education and science writing. Science Online 2013, Raleigh, North Carolina.

Shanahan, M.-C.**,** & Schultz, C. (2013, February). Communicating science where there is no science communication. Science Online 2013, Raleigh, North Carolina.

Willingham, E., Gross, L., Konnikova, M., **Shanahan, M.-C.**, & Ewing, R. (2012, November). Follow 1500 people on twitter? Learn to manage the information deluge. Panel presentation at the National Association of Science Writers conference, Raleigh, North Carolina.

Shanahan, M.-C. (2012, October). What is science? What is the nature of science? Workshop presentation for the Edmonton Science Outreach Network, Edmonton, Alberta.

Shanahan, M.-C., & Anderson, C. (2012, January). Is encouraging scientific literacy more than telling people what they need to know? Science Online 2012, Raleigh, North Carolina.

Shanahan, M.-C. (2011, October). Learning about science writing from kids. National Association of Science Writers, Flagstaff, Arizona.

Shanahan, M.-C. (2011, October). Inspiring study interest through reading and writing about science online. Workshop presented at the Alberta Teachers' Association Science Council Conference, Lake Louise, AB.

Shanahan, M.-C. (2011, April). Relying on each other: The importance of the culture of science. Workshop presentation at LogiCon 2011, Telus World of Science, Edmonton, Alberta.

Schell, D., Loxton, D., Myers, K.O., **Shanahan, M.-C.**, Espejo, A. (2011, April). How to convince your friends and family that science is awesome. Panel presentation at LogiCon 2011, Telus World of Science, Edmonton, Alberta.

Baker, S., Collins, S., & **Shanahan, M.-C.** (2011, January). Still waiting for a superhero: Science Education needs you!. Workshop presentation at Science Online 2011, Raleigh, North Carolina.

Shanahan, M.-C., Bell, A., Yong, E., & Raper, V. (2011, January). Blogs, bloggers and boundaries. Workshop presentation at Science Online 2011, Raleigh, North Carolina.

Shanahan, M.-C. (2011, November). Expertise and interactions in online science commenting. Faculty of Education Research Forum presentation, Edmonton, AB.

Shanahan, M.-C., Bechtel, R., & Henkelman, G. (2010, October). Where are students coming from? Workshop presented at the Alberta Teachers' Association Science Council Conference, Edmonton, AB.

Cavalier, D., & **Shanahan, M.-C.** (2010, January). Adult scientific literacy. Workshop presentation at Science Online 2010, Raleigh, North Carolina.

Shanahan, M.-C., & de los Santos, S. (2009, October). Hybrid adapted primary literature: An integrated approach to scaffolding elementary students' reading of scientific text. Presentation at the Centre for Research in Youth Science Teaching and Learning (CRYSTAL-Alberta) Fall Forum, Edmonton, AB.

Shanahan, M.-C., de los Santos, J., & Morrow, R. (2008, November). Hybrid reading resources for teaching about science. Workshop presented at the Alberta Teachers' Association Science Council Conference, Calgary, AB.

Shanahan, M.-C. (2008, January). Using everyday materials in science education. Workshop presented at the University of Alberta Science and Math Education Students' Association Conference, University of Alberta, Edmonton, AB.

Shanahan, M.-C. & Gustafson, B. (2007, November). Using readily available materials to build devices that move. Workshop presented at the Alberta Teachers' Association Science Council Conference, Edmonton, AB.

Gustafson, B., & **Shanahan, M.-C.** (2007, November). Using models to understand the nature of matter. Workshop presented at the Alberta Teachers' Association Science Council Conference, Edmonton, AB.

Pedretti, E., **Shanahan, M.-C.**, Baker, L. & De Coito, I. (2006, November). Hands-on, minds-on: Lessons learned from Scientists in School. Workshop presented at the Science Teachers' Association of Ontario Conference, Toronto, ON.

Nieswandt, M., **Shanahan, M.-C.**, & Sharkawy, A. (2005, May). Challenging secondary pre-service science teachers' beliefs about the nature of science through argumentation. Poster presented at the Teacher Education for "The Schools We Need" Conference, Toronto, ON.

Popular Media and Online Publications and Productions

Shanahan, M.-C. (2015, April 16). Be careful saying "The Myth about Women in Science" is solved. *BoundaryVision.com.* http://boundaryvision.com/2015/04/16/be-careful-saying-the-myth-about-women-in-science-is-solved/ (Post received over 1000 views and was featured on *Scientific American* blogs as a recommended read).

Shanahan, M.-C. (2013, September 27). Popular Science is wrong to get rid of online comments. *The Conversation.* http://theconversation.com/popular-science-is-wrong-to-get-rid-of-online-comments-18674

Shanahan, M.-C. (host), & Myers, K.O. (producer) (2013, April 26). Spillover: Animal infections, pandemics and preparedness. *Skeptically Speaking*, Episode #210. Edmonton, Alberta: CJSR. (Syndicated to 30 stations in Canada and the United States).

Shanahan, M.-C. (host), & Myers, K.O. (producer) (2013, March 15). Mars Rocks!: Geology and atmospheric studies on the red planet. *Skeptically Speaking*, Episode #204. Edmonton, Alberta: CJSR.

Shanahan, M.-C. (2013, February 26). Taking time to think about expectations for women in undergraduate science. *Inside Higher Ed.* https://www.insidehighered.com/blogs/university-venus/taking-time-think-about-expectations-women-undergraduate-science

Shanahan, M.-C. (host), & Myers, K.O. (producer) (2012, December 9). The Particle at the End of the Universe: The story of the Higgs Boson. *Skeptically Speaking*, Episode #192. Edmonton, Alberta: CJSR.

Shanahan, M.-C. (host), & Myers, K.O. (producer) (2012, September 23). Science Cinema. *Skeptically Speaking*, Episode #184. Edmonton, Alberta: CJSR.

Shanahan, M.-C. (host), & Myers, K.O. (producer) (2012, June 30). Infrastructure and you: Exploring the everyday engineering systems that make our world work. *Skeptically Speaking*, Episode #163. Edmonton, Alberta: CJSR.

Shanahan, M.-C. (host), & Myers, K.O. (producer) (2012, May 6). Newton and Counterfeiter: Understanding scientific methods through exploring the second career of Sir Isaac Newton. *Skeptically Speaking*, Episode #163. Edmonton, Alberta: CJSR.

Shanahan, M.-C. (host), & Myers, K.O. (producer) (2012, April 1). Reef Madness: using the story of Alexander Agassiz to examine the nature of science. *Skeptically Speaking*, Episode #158. Edmonton, Alberta: CJSR.

Shanahan, M.-C. (2012, March). A lesson in rocketry: Teaching science in the Canadian North. *Story Collider Magazine, 2*, 1-6.

Shanahan, M.-C. (host), & Myers, K.O. (producer) (2012, February 19). The Poisoners Handbook: exploring the forensic history of chemistry. *Skeptically Speaking*, Episode #152. Edmonton, Alberta: CJSR.

Shanahan, M.-C. (2011, October 12). Have a great science conversation with a kid. *Scientific American Guest Blog* (Commentary invited by the editors of Scientific American). http://blogs.scientificamerican.com/guest-blog/2011/10/12/having-a-great-science-conversation-with-a-kid/

Shanahan, M.-C. (2011, October 12). Creating Ankylosaur Attack: An interview with author Daniel Loxton. *Scientific American Guest Blog*. http://blogs.scientificamerican.com/guest-blog/2011/10/12/creating-ankylosaur-attack-an-interview-with-author-daniel-loxton/)

Shanahan, M.-C. (2011, July 28). Science education and changing peoples' minds: Writing to convince. *Scientific American Guest Blog.* http://blogs.scientificamerican.com/guest-blog/2011/07/28/science-education-and-changing-peoples-minds-writing-to-convince/

Shanahan, M.-C. (2011, June 16). Arsenic-eating bacteria have changed science education. *Scientific American Guest Blog.* http://www.scientificamerican.com/blog/post.cfm?id=arsenic-bacteria-have-changed-scien-2011-06-16

Shanahan, M.-C. (2011, March 29). Can we declare victory for women in their participation in science? Not yet. *Scientific American Guest Blog*. http://www.scientificamerican.com/blog/post.cfm?id=can-we-declare-victory-in-the-parti-2011-03-29

Shanahan, M.-C. (2011, January 13). An arsenic-laced bad-news letter: Who is the audience for online post-publication peer review? *Scientific American Guest Blog* http://www.scientificamerican.com/blog/post.cfm?id=an-arsenic-laced-bad-news-letter-wh-2011-01-13.

MEDIA COVERAGE AND INTERVIEWS

Riederer, R. (2016, November 29). Who gets to be a science nerd?: The troubling history of popular science. *The New Republic.* https://newrepublic.com/article/139036/gets-science-nerd

Lapointe, P. (Host) (2015, October 19). Élections: quand la science anime les débats. *Je vote pour la science : Radio.* 102.3 FM Radio Centre-Ville, Montréal, http://www.sciencepresse.qc.ca/actualite/2015/10/19/elections-quand-science-anime-debats

Schwartz, Z. (2015, April 27). Why there are still far too few women in STEM. *Macleans*, 128(16), 21-26. http://www.macleans.ca/society/life/why-there-are-still-far-too-few-women-in-stem/

Agence Science-Presse (2015, April 18). Femmes et science: l'étude qui vise la mauvaise cible. *Agence Science-Presse*, http://www.sciencepresse.qc.ca/actualite/2015/04/18/femmes-science-letude-vise-mauvaise-cible

Shaha, A. (2015, March 10). How science can be a children's playground for serious lessons. *The Guardian*, http://www.theguardian.com/science/2015/mar/10/how-science-can-be-a-childrens-playground-for-serious-lessons

Gonzalez, R. (2014, May 10). In defense of GIFs in science writing. *Io9.com.* http://io9.com/in-defense-of-gifs-in-science-writing-1574543444

Hammer, K., & Alphonso, C. (2014, October 7). Educators still trying to attract more women to technology, science fields. *The Globe and Mail*, http://www.theglobeandmail.com/news/national/education/educators-still-trying-to-attract-more-women-to-technology-science-fields/article20955071/

Kielburger, C. & Kielburger, M. (2013, October 25). Can we have thoughtful online debates without the trolls? *The Globe and Mail*, http://www.theglobeandmail.com/life/giving/have-your-say-can-we-have-thoughtful-online-debates-without-the-trolls/article15084033/

Bambury, B. (Host) (2013, September 29). PopSci comment ban: Are comments bad for science? *CBC Radio Day 6.* Toronto, Ontario: Canadian Broadcasting Corporation.

Lapointe, P. (2013, September 26). Comment combattre les trolls en science. *Agence Science-Presse* http://www.sciencepresse.qc.ca/blogue/2013/09/26/comment-combattre-trolls-science

Gonzalez, R. (2013, September 25). Popular Science has turned off comments. Here's why that's a bad idea. *Io9.com.* http://io9.com/popular-science-has-turned-off-comments-heres-why-tha-1389972966

Albright, M. (2013, March 27). Innovative William Penn class puts roadkill to good use: William Penn class studies deer carcass. *Delaware News Journal*. http://www.delawareonline.com/article/20130327/NEWS03/303260089/Innovative-William-Penn-class-puts-roadkill-good-use?

Myers, K.O. (Senior Producer and Editor). (December 16, 2012). *Skeptically Speaking* Episode 193: Science Books for Your Gift List. Edmonton, Alberta: CJSR.

Alphonso, C. (2012, November 2). Science careers start with young girls. *The Globe and Mail*, http://www.theglobeandmail.com/news/national/education/science-careers-start-with-young-girls/article5543555/

Brunhuber, K. (Correspondent). (March 16, 2012). Navel gazing: citizen science through belly-button research (featured interview). *CBC's The National*. Toronto, Ontario: Canadian Broadcasting Corporation.
Hoffart, K., & Grant, K. (March 14, 2012). Social media in education. *The Gateway*, p. 3.
Myers, K.O. (Senior Producer and Editor). (November 20, 2011). *Skeptically Speaking* Episode 134: Culture and Tradition (featured panel member). Edmonton, Alberta: CJSR.
Fullick, M. (2011, November). Should you enter the academic blogosphere? *University Affairs. p. 68.*
Henderson, J.M. (August 17, 2011). Is this scientific proof that women play dumb? *Forbes.com.* http://www.forbes.com/sites/jmaureenhenderson/2011/08/17/is-this-scientific-proof-that-women-play-dumb/
Ebsary, A. (Producer). (March 1, 2011). *Peer Review Radio* Episode 25: Election 41-The Science Issues (featured interview). Ottawa, Ontario: CHUO.
Myers, K.O. (Senior Producer and Editor). (April 3, 2011). *Skeptically Speaking* Episode 106: Science & Culture (featured interview). Edmonton, Alberta: CJSR.
Ebsary, A. (Producer). (March 1, 2011). *Peer Review Radio* Episode 20: Go Sing it On the Mountain – Communicating Science Online (featured interview). Ottawa, Ontario: CHUO.
Brunjes, A. (2010, April 26). Challenging young minds: University of Alberta study introduces youth to new breakthrough research. *Westlock News*, p. 8A. (Article awarded 2nd place 2011 University of Alberta Writing Award by the Alberta Weekly Newspapers Association.)
Zivkovic, B. (2010, February 17). ScienceOnline2010 - Interview with Marie-Claire Shanahan. *A Blog Around the Clock*: Seed Media Group. http://scienceblogs.com/clock/2010/02/scienceonline2010_-_interview_6.php
Busch, C.A. (2009, Summer). Education students help uncover some of life's mysteries at Science Sunday. *The Orange, 10*(2), p. 21.
Bridget Ryan (host) (March 6, 2009). Science Sunday at the University of Alberta Museums. Breakfast Television Live Eye [Television broadcast]. Edmonton, Alberta: Rogers Media CITY-TV.

SERVICE ACTIVITIES: External

The Foundation for Student Science and Technology
Board Member (2016-ongoing)

National Association for Research in Science Teaching
Engineering Education Research Interest Group: Elected Board Member (2013-2016)
International Committee: Member at large (2009-2012)

Canadian Society for the Study of Education
Canadian Science Education Research Group:
Past-President (2011-2012)
President (2010-2011)
Vice President/Conference Program Chair (2009-2010)
Secretary/Treasurer (2008-2009)

Editorial Board Member
Journal of Research in Science Teaching (2015-2018)
FACETS: a Canadian Multidisciplinary Open Access Journal, subject editor for Science Communication/Science Education (2015-ongoing)
Science Education (2014-ongoing)
Studies in Science Education (2013-ongoing)

Other Service:
NSERC Promoscience Selection Committee (2019-2022)
Alberta Advisory Committee for Educational Studies (2018-2019)
SSHRC Insight Grant Selection Committee (2015, 2016, 2019)
Conference Co-Chair, *STEM as Critical Literacies: The First Symposium of the International Society*

for STEM in Education, September 2017, Banff, Alberta, Canada
Alberta Curriculum Development Expert Working Groups (2016-2019)
Canadian Science Education Research Group (SERG) Dissertation Award Committee (2015-2016)
Advisory Board Member: Student Perspectives on Researcher Identity and Transformed Epistemologies (SPRITE), NSF Grant # 1531607, Principal Investigator: Dr. Lisa Benson, Clemson University.
Canadian Amgen Awards for Science Teaching Excellence (2009-2013)

SERVICE ACTIVITIES: Internal
External Tenure File Reviewer for University of Calgary Faculty of Science (2017-2018, 2019-2020)
University of Calgary Graduate Scholarship Committee (Member 2016-2018)
Graduate Programs in Education Student Awards Committee, University of Calgary (Member 2015-2018)
Werklund Research and Scholarly Leave Committee (Member 2015-2018)
Werklund Professorship Selection Committee, University of Calgary (Member, 2015)
2015 Selection Committees, University of Calgary (Math and Statistics, Natural Sciences, Science Education x2)
University of Alberta, Research Ethics Board Panel 3 (Delegated reviewer and committee member, 2011-2013)
Department of Physics Outreach Committee, University of Alberta (Member, 2011-2012)
Faculty of Education Academic Appeals Committee, University of Alberta (Chair, 2010-2012; Alternate Chair, 2008-2010)
Education, Extension, Augustana, Campus Saint Jean Research Ethics Board, University of Alberta (EEASJ REB) (Statutory member 2010-2011, Alternate member 2008-2010)
Faculty of Education Advisory Committee, University of Alberta (Elected Member, 2008-2010)
Faculty of Education Introductory Professional Term Committee (Elected Member, 2007-2010)

TEACHING

Undergraduate Teaching
University of Calgary:
EDUC 427 STEM Education—Secondary
EDUC 460 Specialization I—Secondary Science
EDUC 535 Specialization II—Secondary Science
EDUC 546 Design Thinking for Education
EDUC 520 Interdisciplinary Learning

University of Alberta:
EDEL 330 Curriculum & Instruction in Elementary School Science
EDEL 432 Content Knowledge for Elementary Science I (Physical Sciences)
EDSE 401 ICT and Visualizations in Science Teaching
EDSE 451 Integrating Theory & Classroom Practice in the Advanced Professional Term
EDSE 460 Curriculum & Teaching for Secondary School Physical Sciences Majors II

Graduate Teaching
University of Calgary
EDER 678.63 Theorizing STEM
EDER 689.82 Learning Mathematics: Current Perspectives

University of Alberta
EDEL 530 Language, Inquiry and Science (Topics in science communication)
EDEL 567/EDPY 501 Introduction to Educational Research
EDEL 595 Physical Science for Elementary Teaching
EDES 501 Examining the Nature of Science (Topics in the sociology of science)

GRADUATE STUDENT SUPERVISION

Primary Supervision, Ph.D., Ed.D. (* indicates students who have completed their programs)

Maryam Hachem, Ph.D. Candidate (Learning Sciences, University of Calgary). *Social Emotions in Cognition and Learning: Integrating Research from the Learning Sciences and Neuroscience*. Candidacy October 2019.

Yoni Porat, Ed.D. Candidate (Learning Sciences, University of Calgary*). Discourse Analysis of 'Probability' in an Introductory Statistics Class*. Candidacy October 2018.

Daniel Sharp, Ed.D. Candidate (Learning Sciences, University of Calgary). *An Investigation of the Relationship Between Self-Determination and Self-Regulation as a Predictor of Student Performance in the International Baccalaureate® Diploma Programme in International Schools*. Candidacy July 2019.

Zandra Cerpa, Ed.D. Candidate (Educational Leadership, University of Calgary). *Immigrant Science Teachers in Diverse Classrooms.* Candidacy April 2019.

*Rekha Dhawan, Ed.D. Candidate (Educational Leadership, University of Calgary). *Exploring Instructional Leadership in High School Science Through the Lived Experiences of Principals and Teachers*. Convocation Spring 2022.

* Hebah Alamr, Ph.D. Candidate (Curriculum Studies, University of Calgary). *Figured Worlds of STEM for Saudi High School Girls: A Case Study of an Informal STEM*. Convocation Fall 2021.

*Wendy Simms, Ed.D. (Educational Technology, University of Alberta). *Making citizen science meaningful within a classroom context while fostering environmental identity development in youth*. Convocation Fall 2017.

*Julieta delos Santos, Ph.D. (Secondary Education, University of Alberta). *Identity and teachers' decisions to engage in outdoor education.* Supervisor. Convocation Spring 2018.

*Hagop Yacoubian, Ph.D. (Secondary Education, University of Alberta, co-supervisor with Dr. Stephen Norris). *Towards a philosophically and pedagogically reasonable nature of science curriculum.* Supervisor. Convocation Fall 2012.

Primary Supervision, M.A., M.Ed.

Maddie Bemrose, M.A. Student (Environmental Communications, Royal Roads University), *The Role of Self-Identification in Science, Technology, Engineering and Math (STEM) Media in Young Women's Career Aspirations,* Convocation expected Spring 2021.

Supervisory Committee Membership

Raed Abu Hayyaneh, Ph.D. Student (Environmental Design, University of Calgary). *Nature Knights Program: Evaluating the Effectiveness of Environmental Education Programs in Enhancing Student's Awareness, Knowledge, and Attitudes Towards Nature Conservation in Protected Areas in Jordan*. Candidacy expected Fall 2020.

Dylan Paré, Ph. D. Candidate (Learning Sciences, University of Calgary). *Agents, Virtuality, and Learning about Gender and Sexuality*. Candidacy August 2019.

Stephanie Hladik, Ph.D. Candidate (Learning Sciences, University of Calgary). *Designing Feminist Public Learning Environments for Computing*. Candidacy August 2019.

Marilu Lam-Herrera, Ph.D. Candidate (Learning Sciences, University of Calgary) *Grafemos: Bridging Indigenous and Western Perspectives on Design, Complexity and Computation for Children*. Candidacy April 2019.

Michael Cutler, Ed.D. Candidate (Learning Sciences, University of Calgary). *The Musical Imagination: Re-Imagining a Sound Education through Boundary Play*. Candidacy October 2018.

Christopher Ostrowdun, Ph.D. Candidate (Learning Sciences, University of Calgary), *Navigating Figured Worlds: Preservice Teachers' Understandings of Disability and Inclusion Through Representations*. Candidacy October 2018.

Shaily Bhola, Ph.D. Candidate (Learning Sciences, University of Calgary). *The Role of Small Group Discussion in Conceptual Change in Postsecondary Chemistry*. Candidacy August 2016.

*Glenda Carson, Ph.D. (Faculty of Nursing, University of Alberta). *Learning about gestational diabetes mellitus: Encountering the other in nurse-patient pedagogic relationships.* Supervisory committee member, Convocation Spring 2012.

*Robert Bechtel, Ph.D. (Secondary Education, University of Alberta). *A discourse analysis comparing the use of models and metaphors in Western science and traditional knowledge.* Supervisory committee member, Candidacy May 2010, Convocation Fall 2011.

Examining Committee Membership

Mallory Smith, Ph.D Candidate (English, University of Calgary). *Smutty Alchemy*. Defense Fall 2020.

Meagan LaRiviere, Ed.D. Candidate (Curriculum Studies, University of Calgary). *Integral Analysis of Registered Nurse Professional Learning in Alberta.* Examining Committee Member, Candidacy December 2016.

Kathleen Miho Lowan-Trudeau, M.E.D. (Environmental Design, University of Calgary). *Forms of Capital in the Process of School Ground Greening*. Examining Committee Member, Convocation Spring 2016.

Soroush Sabbaghan, Ph.D. (Curriculum Studies, University of Calgary). *A Pedagogical Mathematics Register Framed by Systemic Functional Linguistics: The Case of the Equals Sign*. Examining Committee Member, Convocation Fall 2015.

Ayman Eleyan Aljarrah, Ph.D. Candidate (Curriculum Studies, University of Calgary). Exploring Collective Creativity in Elementary Mathematics Classroom Settings. Examining Committee Member, Candidacy September 2015.

David Ikenouye, Ed.D. (Curriculum Studies, University of Calgary) *Teachers in the wild are pragmatic: An investigation into teacher integration of technology from an Integral perspective*. Examining Committee Member, Convocation Fall 2015.

Tai Munro, Ph.D. (Secondary Education, University of Alberta). *Visualizing climate change through photography: outdoor educators examine climate change within their personal contexts*. Examining committee member, Convocation Fall 2012.

Erin Atkindson, M.Ed. (Educational Psychology, University of Alberta). Pre-Service teachers' causal attributions about fasd and their teaching self-efficacy. Examining committee member, Convocation Fall 2012.

Lori Friesen, Ph.D. (Elementary Education, University of Alberta). *How might a therapy dog influence interactions, relationships, and pedagogy in an elementary language arts classroom community?* Examining committee member, Convocation Spring 2012.

Marnie Lenore Hutchison, M.Ed. (Educational Psychology, University of Alberta). Executive function strategies used by children and adolescents with Fetal Alcohol Spectrum Disorder. Examining committee member, Convocation Fall 2011.

Wing Sze Wence Leung, M.Ed. (Educational Psychology, University of Alberta). Short and long term effect of neurofeedback and metacognitive training on children's Attention Deficit/Hyperactivity Disorder symptoms. Examining committee member. Convocation Fall 2011.

Tracy Ann Stock, M.Ed. (Secondary Education, University of Alberta). *Investigating secondary science teachers' beliefs about what counts most as science education.* Convocation November 2010.

Jennell Rempel, M.Ed. (Secondary Education, University of Alberta). *Contextualized evidence of learning in environmental education: Using drawings, interviews and surveys to investigate students' understanding and perceptions of wetlands.* Examining committee member. Convocation June 2009.

Man-Wai Chu, M.Ed. (Secondary Education, University of Alberta). *Exploring science curriculum emphases in relation to the Alberta Physics program-of-study.* Examining committee member. Convocation November 2009.

External Examinations

Ellen Rose Watson (Department of Secondary Education, University of Alberta). *Connecting Epistemic Beliefs about Physics Knowledge and Curriculum Concerns in Saskatchewan: A Mixed Analysis Study*. External examiner, Defense March 2021.

Bernard Ho (Department of Curriculum, Teaching and Learning, University of Toronto). *Exploring Students' Perspectives on Critical Thinking Integration in College Pre-Health Science Education.* External examiner, Defense September 2020.

Henriette Tolstrup Holmegaard (Department of Science Education, University of Copenhagen). *Students' narratives, negotiations, and choices: A longitudinal study of Danish students' transition process into higher education science, engineering and mathematics*. External examiner, Defense June 2012.