

## KATHERINE L. McNEILL

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### EDUCATION

**University of Michigan**, Ann Arbor MI  
Ph.D., Science Education 2006  
Dissertation title: *Supporting students' construction of scientific explanations through curricular scaffolds and teacher instructional practices*  
Committee Members: Joseph Krajcik (chair), Elizabeth Davis, Brian Reiser, Priti Shah  
M.S., Ecology and Evolutionary Biology 2005  
M.S., Science Education 2005  
**Brown University**, Providence RI 1998  
B.A., Biology & B.A., English and American Literature (Honors)

### PROFESSIONAL EXPERIENCE

**Boston College**, Chestnut Hill, MA  
*Professor, Science Education* 2018 - present  
*Associate Professor, Science Education* 2012 - 2018  
*Assistant Professor, Science Education* 2006 - 2012  
**University of Michigan**, Ann Arbor, MI  
*Graduate Student Research Assistant* 2001 - 2006  
*Teaching Assistant - ED 890: Multilevel Analysis of Survey Data* 2005 & 2006  
**The Ellis School**, Pittsburgh, PA  
*6<sup>th</sup> and 7<sup>th</sup> Grade Science Teacher* 1998 - 2001  
**Center for Talented Youth**, The Johns Hopkins University  
*Instructor - High School Biology, Science and Engineering, Dynamic Earth* summers 1998 - 2001

### REFEREED JOURNAL ARTICLES

Affolter, R., Brinza, G. & McNeill, K. L. (in press). "Some of you are smiling now": Supporting trust, risk taking and equity in your classroom *Science Scope*.

Lowell, B. R., Cherbow, K. & McNeill, K. L. (in press). Considering discussion types to support collective sensemaking during a storyline unit. *Journal of Research in Science Teaching*.

McNeill, K. L. Lowenhaupt, R., Cherbow, K. & Lowell, B. R. (in press). Professional development to support principals' vision of science instruction: Building from their prior experiences to support the science practices. *Journal of Research in Science Teaching*.

McNeill, K. L., Affolter, R., & Clinchot, M. (in press). Shifting from learning about to figuring out: PD resources to support classroom change. *Science Scope*

Henderson, J. B., Zilmer, N., Holton, A., Weiner, S., Greenwald, E., Goss, M, Lopez, M. L., Morales, C., Pearson, P. D. & McNeill, K. L. (in press). How science teachers DiALoG their classrooms:

Towards a practical and responsive formative assessment of oral argumentation. *Journal of Science Education and Technology*.

Edelson, D. C., Reiser, B. J., McNeill, K. L., Mohan, A., Novak, M., Mohan, L., Affolter, R., McGill, T., Bracey, Z. B., Noll, J. D., Kowalski, S., Novak, D., Lo, A., Landel, C., Krumm A., Penuel, W. R., Van Horne, K., Gonzalez-Howard, M. & Suarez, E. (2021). Developing research-based instructional materials to support large-scale transformation of science teaching and learning: The approach of the OpenSciEd middle school program. *Journal of Science Teacher Education*, 32(7), 780-804.

Lowell, B. R., Cherbow, K. & McNeill, K. L. (2021). Re-design or re-label?: How a commercial curriculum and its implementation oversimplifies key features of the NGSS. *Science Education*, 105(1), 5-32.

González-Howard, M., & McNeill, K.L. (2020). Acting with epistemic agency: Characterizing student critique during argumentation. *Science Education*, 104(6), 953-982.

Marco-Bujosa, L. M., McNeill, K. L., & Friedman, A. (2020). Becoming an urban science teacher: How beginning teachers use their identities to negotiate contradictory school contexts. *Journal of Research in Science Teaching*, 57(1), 3-32.

Cherbow, K., McKinley, M.T, McNeill, K. L. & Lowenhaupt, R. (2020). Current k-8 science instruction: A systems analysis of the similarities and differences with the science practices. *Science Education*, 104(3), 446-478.

Marco-Bujosa, Levy, A J. & McNeill, K.L. (2020). A case study exploring the identity of an in-service elementary science specialist: A language teacher first. *Research in Science Education*, 50(1), 79-98.

Lowenhaupt, R. & McNeill, K. L. (2019). Subject-specific instructional leadership in K8 Schools: The supervision of science in an era of reform. *Leadership and Policy in School*, 18(3), 460-484.

Lowell, B. R. & McNeill, K. L. (2019). Keeping critical thinking afloat: Shifting from activity-based to phenomenon-based planning. *Science Scope*, 43(1), 64-69.

González-Howard, M., & McNeill, K.L. (2019). Teachers' framing of argumentation goals: Working together to develop individual versus communal understanding. *Journal of Research in Science Teaching*, 56(6), 821-844.

Loper, S. McNeill, K. L., González-Howard, M, Marco-Bujosa, L. M., & O'Dwyer, L. (2019). The impact of multimedia educative curriculum materials (MECMs) on teachers' beliefs about scientific argumentation. *Technology, Pedagogy and Education*, 28(2), 173-190.

Cherbow, K., McNeill, K. L., Lowenhaupt, R., McKinley, M. T., & Lowell, B. R. (2019). NGSS lesson adaptations: A resource for integrating the science practices into your instruction. *Science and Children*, 56(5), 73-77.

McNeill, K.L., Marco-Bujosa, L. M., González-Howard, M., Loper, S. (2018). Teachers' enactments of curriculum: Fidelity to procedure versus fidelity to goal for scientific argumentation. *International Journal of Science Education*, 40(12), 1455-1475.

McNeill, K. L. & Reiser, B. J. (2018). Open source for opening minds: New OpenSciEd materials support science standards. *The Learning Professional*, 39 (6), 44-48.

González-Howard, M., Marco-Bujosa, L. M., McNeill, K.L., Goss, M. & Loper, S. (2018). The argumentation toolkit: A resource for integrating argumentation into your science classroom. *Science Scope* 42(3). 74-78.

McNeill, K.L., Lowenhaupt, R., & Katsh-Singer, R. (2018). Instructional leadership and the implementation of the NGSS: Principals' understandings of science practices. *Science Education*, 102(3), 452-473.

- Henderson, J. B., McNeill, K.L., González-Howard, M., Close, K. & Evans, M. (2018). Key challenges and future directions for educational research on scientific argumentation. *Journal of Research in Science Teaching*, 55(1), 5-18.
- Marco-Bujosa, L. M., González-Howard, M., McNeill, K.L., & Loper, S. (2017). Designing and using online modules for teacher educators: Supporting teacher learning of scientific argumentation. *Innovations in Science Teacher Education*, 4(2).
- McNeill, K. L., González-Howard, M., Katsh-Singer, R. & Loper, S. (2017). Moving beyond pseudoargumentation: Teachers' enactments of an educative science curriculum focused on argumentation. *Science Education*, 101(3), 426-457.
- González-Howard, M., McNeill, K. L., Marco-Bujosa, L. M & Proctor, C. P. (2017). "Does it answer the question or is it French fries?": An exploration of language supports for scientific argumentation. *International Journal of Science Education*, 39(5), 528-547.
- McNeill, K. L. & Berland, L. (2017). What is (or should be) scientific evidence use in K-12 classrooms? *Journal of Research in Science Teaching*. 54(5), 672-689.
- Loper, S., McNeill, K. L. & González-Howard, M. (2017). Multimedia educative curriculum materials (MECMs): Teachers' use of MECMs to support argumentation. *Journal of Science Teacher Education*, 28(1), 36-56.
- Marco-Bujosa, L.M., McNeill, K. L., González-Howard, M., & Loper, S. (2017). An exploration of teacher learning from an educative reform-oriented curriculum: Case studies of teacher curriculum use. *Journal of Research in Science Teaching*, 54(2), 141-168.
- McNeill, K. L., Katsh-Singer, R., González-Howard, M., & Loper, S. (2016). Factors impacting teachers' argumentation instruction in their science classrooms. *International Journal of Science Education*, 38(12), 2026-2046.
- Knight-Bardsley, A. M. & McNeill, K. L. (2016). Teachers' pedagogical design capacity for scientific argumentation. *Science Education*. 100(4), 645-672.
- González-Howard, M. & McNeill, K. L. (2016). Learning in a community of practice: Factors impacting English-learning students' engagement in scientific argumentation. *Journal of Research in Science Teaching*, 53(4), 527-553.
- Pimentel, D. S., & McNeill, K. L. (2016). Secondary science students' beliefs about class discussions: A case study comparing and contrasting academic tracks. *International Journal of Science Education*, 38(12), 2047-2068.
- McNeill, K. L., González-Howard, M., Katsh-Singer, R. & Loper, S. (2016). Pedagogical content knowledge of argumentation: Using classroom contexts to assess high quality PCK rather than pseudoargumentation. *Journal of Research in Science Teaching*, 53(2), 261-290.
- Katsh-Singer, R., McNeill, K. L., & Loper, S. (2016). Scientific argumentation for all? Comparing teacher beliefs about argumentation in high, mid and low SES schools. *Science Education*. 100(3), 410-436.
- McNeill, K. L., Katsh-Singer, R. & Pelletier, P. (2015). Assessing science practices – Moving your class along a continuum. *Science Scope*, 39(4), 21-28.
- Knight, A. M. & McNeill, K. L. (2015). Comparing students' individual written and collaborative oral socioscientific arguments. *International Journal of Environmental and Science Education*. 10(5), 623-647.
- Pearson, P. D, Knight, A. M., Cannady, M., Henderson, J. B & McNeill, K. L. (2015) Assessment at the intersection of science and literacy. *Theory into Practice*, 54(3), 228-237.

- González-Howard, M., McNeill, K. L. & Ruttan, N. (2015). What's our three-word claim?: Supporting English language learning students' engagement in scientific argumentation. *Science Scope*, 38(9), 10-16.
- McNeill, K. L. & Knight, A. M. (2013). Teachers' pedagogical content knowledge of scientific argumentation: The impact of professional development on k-12 teachers. *Science Education*, 97(6), 936-972.
- Piazza, P., & McNeill, K. L. (2013). Negotiating competing goals in the development of an urban ecology practitioner inquiry community. *Journal of Science Teacher Education*, 24(7), 1157-1176.
- McNeill, K. L., Pimentel, D. S., & Strauss, E. G. (2013). The impact of high school science teachers' beliefs, curricular enactments, and experience on student learning during an inquiry-based urban ecology curriculum. *International Journal of Science Education*, 35(15), 2608-2644.
- Pimentel, D. S. & McNeill, K. L. (2013). Conducting talk in science classrooms: Investigating instructional moves and teachers' beliefs. *Science Education*, 97(3), 367-394.
- Price, J. F. & McNeill, K. L. (2013). Toward a lived science curriculum in intersecting figured worlds: An exploration of individual meanings in science education. *Journal of Research in Science Teaching*, 50(5), 501-529.
- Hashimoto-Martell, E. A., McNeill, K. L., & Hoffman, E. M. (2012). Connecting urban youth with their environment: The impact of an urban ecology course on student content knowledge, environmental awareness and responsible behaviors. *Research in Science Education*, 42(5), 1007-1026.
- Berland, L. K. & McNeill, K. L. (2012). For whom is argument and explanation a necessary distinction? A response to Osborne and Patterson. *Science Education*, 96(5), 808-813.
- McNeill, K. L. & Vaughn, M.H. (2012). Urban high school students' critical science agency: Conceptual understandings and environmental actions around climate change. *Research in Science Education*, 42(2), 373-399.
- Price, J. F., Pimentel, D.S., McNeill, K.L., Strauss, E. G., & Barnett, M. (2011). Science in the 21<sup>st</sup> century: More than just the facts. *The Science Teacher*, 78(7), 36-41.
- McNeill, K. L. (2011). Elementary students' views of explanation, argumentation and evidence and abilities to construct arguments over the school year. *Journal of Research in Science Teaching*, 48(7), 793-823.
- McNeill, K. L. & Martin, D. M. (2011). Claims, evidence and reasoning: Demystifying data during a unit on simple machines. *Science and Children*. 48(8), 52-56.
- Fogleman, J., McNeill, K. L., & Krajcik, J. (2011). Examining the effect of teachers' adaptations of a middle school science inquiry-oriented curriculum unit on student learning. *Journal of Research in Science Teaching*. 48(2), 149-169.
- Berland, L. K. & McNeill, K. L. (2010). A learning progression for scientific argumentation: Understanding student work and designing supportive instructional contexts. *Science Education*, 94(5), 765-793.
- McNeill, K. L. & Pimentel, D. S. (2010). Scientific discourse in three urban classrooms: The role of the teacher in engaging high school students in argumentation. *Science Education*, 94(2), 203-229.
- McNeill, K. L. & Krajcik, J. (2009). Synergy between teacher practices and curricular scaffolds to support students in using domain specific and domain general knowledge in writing arguments to explain phenomena. *Journal of the Learning Sciences*, 18(3), 416-460.

- McNeill, K. L. (2009). Teachers' use of curriculum to support students in writing scientific arguments to explain phenomena. *Science Education*, 93(2), 233-268.
- Novak, A. M., McNeill, K. L., & Krajcik, J. (2009). Helping students write scientific explanations. *Science Scope*, 33(1), 54-56.
- McNeill, K. L. & Krajcik, J. (2008). Scientific explanations: Characterizing and evaluating the effects of teachers' instructional practices on student learning. *Journal of Research in Science Teaching*, 45(1), 53-78.
- Hug, B. & McNeill, K. L. (2008). First and second hand experiences in science: Does data type influence classroom conversations? *International Journal of Science Education*, 30(13), 1725-1751.
- Krajcik, J., McNeill, K. L. & Reiser, B. (2008). Learning-goals-driven design model: Curriculum materials that align with national standards and incorporate project-based pedagogy. *Science Education*, 92(1), 1-32.
- McNeill, K. L., Lizotte, D. J., Krajcik, J., & Marx, R. W. (2006). Supporting students' construction of scientific explanations by fading scaffolds in instructional materials. *Journal of the Learning Sciences*, 15(2), 153-191.

## BOOK CHAPTERS

- McNeill, K. L., Affolter, R. & Reiser, B. J. (accepted). Anchoring science professional learning in curriculum materials enactment: Illustrating theories in practice to support teacher learning. In Superfine, A. C., Goldman, S. R. & Ko, M. (Eds.), *Changing content and contexts of teacher learning: Supporting shifts in instructional practices*. New York, NY: Routledge.
- McNeill, K. L. (2020). Integrating and supporting science practices in elementary classrooms. In Davis, E. A., Zembal-Saul, C. & Kademian, S. (Eds.). *Sensemaking in elementary science: Supporting teacher learning*. (pp. 87-94) New York, NY: Routledge.
- González-Howard, M., & McNeill, K.L. (2019). Supporting linguistically diverse students in scientific argumentation across writing and talking. In Spycher, P. & Haynes, E. (Eds.). *Culturally and linguistically diverse learners and STEAM: Teachers and researchers working in partnership to build a better path forward*. (pp. 77-94). Charlotte, NC: Information Age Publishing.
- Loper, S., McNeill, K. L. & Goss, M. (2018). Developing multimedia educative curriculum materials to support middle school science teachers' PCK for argumentation. In Uzzo, S. M., Graves, S., Shay, E., Harford, M., & Thompson, R. (Eds.). *Pedagogical Content Knowledge in STEM*. (pp. 241-264) New York, NY: Springer.
- McNeill, K. L., Berland, L. K. & Pelletier, P. (2017). Constructing explanations. In Schwarz, C., Passmore, C., & Reiser, B.J. (Eds.). *Helping students make sense of the world using next generation science and engineering practices*. (pp. 205-228) Arlington, VA: National Science Teachers Association Press.
- Berland, L. K., McNeill, K. L., Pelletier, P. & Krajcik, J. (2017). Engaging in scientific argumentation. In Schwarz, C., Passmore, C., & Reiser, B.J. (Eds.). *Helping students make sense of the world using next generation science and engineering practices*. (pp. 229-258) Arlington, VA: National Science Teachers Association Press.
- Krajcik, J. & McNeill, K. L. (2015). Developing and assessing scientific explanation tasks. In Gunstone, R. (Ed.). *Encyclopedia of science education*, pp. 285-291. Dordrecht: Springer Netherlands.

McNeill, K. L. & Martin, D. M. (2013). Claims, evidence and reasoning. In Froschauer, L. (Ed.). *A year of inquiry: A collection for elementary educators*. (pp. 170-175). Arlington, VA: National Science Teachers Association Press.

McNeill, K. L. & Krajcik, J. (2008). Assessing middle school students' content knowledge and reasoning through written scientific explanations. In Coffey, J., Douglas, R., & Stearns, C. (Eds.), *Assessing science learning: Perspectives from research and practice*. (pp. 101-116). Arlington, VA: National Science Teachers Association Press.

McNeill, K. L. & Krajcik, J. (2008). Inquiry and scientific explanations: Helping students use evidence and reasoning. In Luft, J., Bell, R. & Gess-Newsome, J. (Eds.). *Science as inquiry in the secondary setting*. (p. 121-134). Arlington, VA: National Science Teachers Association Press.

Krajcik, J., Slotta, J., McNeill, K. L. & Reiser, B (2008). Designing learning environments to support students constructing coherent understandings. In Kali, Y., Linn, M. C., & Roseman, J. E. (Eds.) *Designing coherent science education: Implications for curriculum, instruction, and policy*. (pp.39-64). New York, NY: Teacher College Press.

McNeill, K. L. & Krajcik, J. (2007). Middle school students' use of appropriate and inappropriate evidence in writing scientific explanations. In Lovett, M & Shah, P (Eds.), *Thinking with data*. (pp. 233-265). New York, NY: Taylor & Francis Group, LLC.

Harris, C. J., McNeill, K. L., Lizotte, D. L., Marx, R. W. & Krajcik, J. (2006). Usable assessments for teaching science content and inquiry standards. In McMahan, M., Simmons, P., Sommers, R., DeBaets, D., & Crowley, F. (Eds.), *Assessment in science: Practical experiences and education research* (pp. 67-88). Arlington, VA: National Science Teachers Association Press.

Sutherland, L., M. McNeill, K. L., Krajcik, J. & Colson, K. (2006). Supporting students in developing scientific explanations. In Douglas, R., Klentschy, M. P., Worth, K., & Binder, W. (Eds.), *Linking science and literacy in the K-8 classroom*. (pp. 163-181). Arlington, VA: National Science Teachers Association Press.

## BOOKS

Lowenhaupt, R., McNeill, K. L., Katsh-Singer, R., Lowell, B. R., Cherbow, K. & (in press). *The Instructional leader's guide to effective K-8 science practices*. Alexandria, VA: ASCD.

Zemal-Saul, C., McNeill, K. L., & Hershberger, K. (2013). *What's your evidence? Engaging k-5 students in constructing explanations in science*. New York, NY: Pearson Allyn & Bacon.

Zemal-Saul, C., McNeill, K. L., & Hershberger, K. (2013). *Book study facilitator's guide: What's your evidence? Engaging k-5 students in constructing explanations in science*. New York, NY: Pearson Allyn & Bacon.

McNeill, K. L. & Krajcik, J. (2012). *Supporting grade 5-8 students in constructing explanations in science: The claim, evidence and reasoning framework for talk and writing*. New York, NY: Pearson Allyn & Bacon.

McNeill, K.L. & Krajcik, J. (2012). *Book study facilitator's guide: Supporting grade 5-8 students in constructing explanations in science: The claim, evidence and reasoning framework for talk and writing*. New York, NY: Pearson Allyn & Bacon.

## DIGITAL PUBLICATIONS

McNeill, K. L. (2020). [Teaching with storylines](#). Next Gen Navigator monthly e-newsletter.

## OTHER PAPERS IN PROGRESS

Cherbow, K. & McNeill, K. L. (minor revision). Planning for epistemic agency in storyline discussions: A revelatory case of student-informed curricular sensemaking. *Journal of the Learning Sciences*.

Katsh-Singer, R., McNeill, K. L. & Baxter, E. (in review). Every rock has a story: Scientists and students as storytellers. *Science & Children*.

Marco-Bujosa, L., McNeill, K. L. & Friedman, A. (in preparation). Beginning teacher dispositions toward social justice and science teaching. *Journal of Science Teacher Education*.

McNeill, K. L., Affolter, R., Lowell, B. R., Cherbow, K & Gonzalez, C. (in preparation). *Supporting teachers through curriculum-based professional learning: Shifting from learning about to figuring out*.

Lowell, B. R. & McNeill, K. L. (in preparation). Changes in beliefs and confidence over time: A longitudinal study of middle school science teacher professional development

## CURRICULUM MATERIALS AND WEBSITES

OpenSciEd (developed 2019-present).

<https://www.openscienced.org/>

Instructional Leadership for Science Practices (developed 2014 - 2019).

<http://www.sciencepracticesleadership.com>

Boston Public Schools (BPS) Science Practices (developed 2015 – 2018).

<http://bpssciencepractices.weebly.com/>

Argumentation Toolkit (developed 2015 – 2018). <http://www.argumentationtoolkit.org>

Scientific Argument Assessments for Middle School Students (developed 2012 – 2014).

<http://sciencearguments.weebly.com>

Strauss, E.G., McNeill, K. L., Barnett, M., & Reece, F. (2011). *Urban EcoLab: How do we develop healthy and sustainable cities?* Chestnut Hill, MA: Boston College. Available at:

<http://urbanecolabcurriculum.com/>

McNeill, K. L., Harris, C. J., Heitzman, M., Lizotte, D. J., Sutherland, L. M., & Krajcik, J. (2004).

How can I make new stuff from old stuff? In J. Krajcik & B. J. Reiser (Eds.), *IQWST: Investigating and questioning our world through science and technology*. Ann Arbor, MI: University of Michigan.

## GRANTS

**Principal Investigator. *OpenSciEd Equitable Instruction Initiative*.** \$5,328,500. One8 Foundation. July 2021 – July 2026. This project will provide school grants, design-based research and support for the scale up of the OpenSciEd curriculum and professional learning across Massachusetts. The goal of the program is to provide school grants for 110 schools over the first three years of the grant. The project will provide support for those schools through professional learning and coaching for teachers as well as support for instructional leaders. In addition, we will engage in design-based research to develop tools and professional development materials explicitly for the Massachusetts context.

**Principal Investigator. *Supporting teacher customizations of curriculum materials for equitable student sensemaking in secondary science*.** \$2,950,864. National Science Foundation – DRL-2101384, July 2021 – June 2025. This project includes research examining teachers' customization

processes and the development of tools to support teachers in adapting curriculum materials for their specific school context to facilitate equitable science sensemaking for all students. The research program includes: (1) Empirical study of teachers' customization processes; (2) Theoretical model of teacher thinking and learning that underlies customization; (3) Tools to support principled customization consistent with the goals of the reform; and (4) Empirical study of how tools influence teachers. Co-PIs: Dr. Renee Affolter, Boston College and Dr. Brian Reiser, Northwestern University.

**Co-Principal Investigator. *Engaging Elementary Students in Science through the Stories of the Earth: Broadening Participation in Earth and Environmental Science.*** \$15,000. Boston College Schiller Institute Grant for Exploratory Collaborative Scholarship. June 2016 – May 2019. The primary goal of this project is to develop videos and resources for “Every Rock has a Story” to engage and inspire grade k-5 children about the Earth through storytelling. PI: Dr. Ethan Baxter, Boston College

**Principal Investigator. *OpenSciEd Developers Consortium Phase 4.*** \$377,541. National Center for Civic Innovation, Inc. January 2021 – February 2022. This grant is a continuation of the OpenSciEd Professional Learning for Middle School Science work. The goal is to develop professional learning materials for three middle school science curricular units for Round 6 and revise the previous rounds for public release.

**Principal Investigator. *OpenSciEd Round 5 and 6 Teacher Professional Development.*** \$39,000. One8 Foundation. July 2020 – May 1 2021. The grant supports the professional development workshops for OpenSciEd middle school teachers in Massachusetts during the 2020-2021 school year.

**Principal Investigator. *OpenSciEd Developers Consortium Phase 3.*** \$356,019. National Center for Civic Innovation, Inc. January 2020 – December 2020. This grant is a continuation of the OpenSciEd Professional Learning for Middle School Science work. The goal is to develop professional learning materials for six middle school science curricular units for Rounds 4 and 5. The professional learning includes in-person professional development and educative features embedded within the curriculum. In addition, the project includes the design of facilitation materials and training of facilitators to lead the professional development across 10 states.

**Principal Investigator. *OpenSciEd Developers Consortium Phase 2.*** \$219,091. National Center for Civic Innovation, Inc. January 2019 – December 2019. This grant is a continuation of the OpenSciEd Professional Learning for Middle School Science work. The goal is to develop professional learning materials for six middle school science curricular units for Rounds 2 and 3. The professional learning includes in-person professional development and educative features embedded within the curriculum. In addition, the project includes the design of facilitation materials and training of facilitators to lead the professional development across 10 states.

**Principal Investigator. *OpenSciEd Teacher Training.*** \$40,714. Massachusetts Department of Elementary and Secondary Education. July 2019 – June 2020. The grant supports the professional development workshops for OpenSciEd middle school teachers in Massachusetts during the 2019-2020 school year.

**Co-Principal Investigator. *Science Educators for Urban Schools Phase II.*** \$799,980. National Science Foundation – DUE-1439393, September 2014 – August 2020. This grant is a continuation of the SEUS Phase I project. In SEUS 2, we will continue to prepare and support new individuals who received an undergraduate degree in the sciences to earn a masters in science education and then teach science in urban schools. In addition, we will research what characteristics of the program have potentially impacted the strong retention of previous SEUS scholars in teaching science in urban schools. PI: Dr. Audrey Friedman, Boston College. Other Co-PIs: Dr. Thomas C. Chiles, Boston College and Dr. Michael Graf, Boston College.

**Principal Investigator. *OpenSciEd Developers Consortium Phase 1.*** \$313,653. National Center for Civic Innovation, Inc. January 2018 – August 2019. This project focuses on the development of professional learning design principles and experiences for teachers enacting six open-source middle school science instructional materials aligned with the three dimensional learning goals in the Next Generation Science Standards (NGSS). The professional learning includes three different areas of teacher support including in-person professional development, online professional development and educative features embedded within the curriculum.

**Principal Investigator. *Meeting the new science standards: Multimedia professional development resources prioritizing science as a practice.*** \$104,511. Boston College Collaborative Fellows Grant. June 2016 – May 2019. The primary goal of this Collaborative Fellows project is to develop and research multimedia professional development (PD) resources for the Boston Public Schools (BPS) that address the new science standards. These resources include an online website (<http://bpssciencepractices.weebly.com>) and accompanying student assessments focused on the science practices, a key element of the new standards.

**Principal Investigator. *Instructional Leadership for Scientific Practices: Resources for Principals in Evaluating and Supporting Teachers' Science Instruction.*** \$449,839. National Science Foundation – DRL-1415541. September 2014-August 2018. This project consisted of the research and development of a set of online materials and mobile application software to support principals' knowledge and instructional supervision of the scientific practices in the *Next Generation Science Standards (NGSS)*. Co-PI: Dr. Rebecca Lowenhaupt, Boston College.

**Co-Principal Investigator. *Constructing and Critiquing Arguments in Middle School Science Classrooms: Supporting Teachers with Multimedia Educative Curriculum Materials.*** \$3,147,015. National Science Foundation – DRL-1119584. September 2011 – August 2017. The project includes the design and research of how multimedia educative curricular materials (MECMs), within the context of a year-long Earth and Space Science curriculum, can support middle school science teachers in effectively integrating argumentation into their classroom practice. PI: Dr. Suzanna Loper, Lawrence Hall of Science. Other Co-PI: Jacqueline Barber, Lawrence Hall of Science.

**Senior Personnel. *Constructing and Critiquing Arguments: Diagnostic Assessment for Information and Action System.*** \$1,281,900. Carnegie Corporation of NY – B 8780, July 2011 – June 2014. This project focuses on creating generalizable frameworks, knowledge, and tools to build a rich assessment system to support middle school students in constructing and critiquing oral and written arguments in science. PIs: Jacqueline Barber, Lawrence Hall of Science and Dr. P. David Pearson, University of California Berkeley.

**Co-Principal Investigator. *Science Educators for Urban Schools,*** \$749,980 National Science Foundation – DUE-0833278, September 2008 – August 2013. This grant focused on the preparation, support and retention of individuals who received an undergraduate degree in the sciences to earn a masters in science education and then teach science in urban schools. PI: Dr. Audrey Friedman, Boston College. Other Co-PI: Dr. Vidya Madhavan, Boston College.

**Principal Investigator. *Supporting Grade 5-8 Students in Writing Scientific Explanations,*** \$198,578 National Science Foundation – DRL-0836099, August 2008 – July 2011. This grant included the development of a book and a research study to investigate the impact of that book and accompanying professional development on teachers' beliefs and classroom practices to support grade 5-8 students in constructing scientific explanations.

**Co-Principal Investigator. *Urban Ecology Course Materials Created with a Universal Design for Learning Framework,*** \$2,093,000 National Science Foundation – DRL-0607010, September 2006 – August 2011. This project focused on the development and study of an urban ecology curriculum that engages youth in science by providing a locally relevant, field-based course for urban high school

students. PI: Dr. Eric Strauss, Boston College. Other Co-PIs: Dr. Michael Barnett, Boston College, Mr. Charles Lord, Urban Ecology Institute and Dr. Tracey Hall, Center for Applied Special Technologies.

**Principal Investigator. *Supporting Urban Elementary Students in Scientific Argumentation***, \$15,000 Boston College Research Incentive Grant, June 2008 – May 2009. This research study examined urban elementary students’ abilities to engage in scientific argumentation in both talk and writing, investigated how students with diverse backgrounds navigate between everyday and scientific discourses, and developed instructional strategies to support students in this scientific practice.

**Co-Principal Investigator. *Development Of An Integrated Pathway For Urban Stem Teaching and Learning In Grades 5-8***, \$799,860 National Science Foundation – DRL-0639466, January 2007 – December 2010. This grant focused on the development of urban ecology curriculum materials that are sequenced to improve students learning of ecological concepts from grade five through eight in the out-of-school time (OST) environment. PI: Dr. Michael Barnett, Boston College. Other Co-PIs: Dr. Eric Strauss, Boston College, Mr. Charles Lord, Urban Ecology Institute.

**Co-Principal Investigator. *Enhancing Science Experiences for minority students through technology-enhanced field-studies***, \$68,000, Hewlett-Packard - 1896660, Spring 2007 – Spring 2008. This grant provided resources and funding to engage university students, in-service teachers, and high school student in learning how to use tablet PCs and GIS technology. PI: Dr. Michael Barnett, Boston College. Other Co-PIs: Dr. Eric Strauss, Boston College, Dr. Alan Kafka, Boston College.

## AWARDS AND HONORS

NSTA <i>Research Worth Reading</i> award for <i>JRST</i> article, What is (or should be) scientific evidence in k-12 classrooms?	2018
Fellow, International Society for Design and Development in Education (ISDDE)	2015
Presenters’ Choice Award at the NSF Teaching & Learning Video Showcase	2015
Rubovits Award for Best Paper at NEERO	2013
NARST Early Career Research Award	2011
Boston College Teaching with New Media Award, Magna Cum Laude	2010
Featured <i>JRST</i> research article in <i>The Science Teacher</i> and <i>Science Scope</i>	2009
Early Career Research Associate, Center for Curriculum Materials in Science	2006 – 2007
Graduate Fellow, Center for Curriculum Materials in Science	2002 – 2006
University of Michigan Rackham One-term Dissertation Fellowship	2006
University of Michigan School of Education Fellowship	2001 –2004

## KEYNOTES AND INVITED PRESENTATIONS

McNeill, K. L. & Affolter, R. (2021, June). *Curriculum-based professional development: Using the student perspective, images of classrooms and reflection to support shifts in teachers’ beliefs and confidence*. Virtual presentation for the National Science Education Leadership Association.

Katsh-Singer, R. & McNeill, K. L. (2021, May). *Book talk: The instructional leader’s guide to effective k-8 science practices*. Virtual presentation for the Massachusetts Science Education Leadership Association.

- Short, J., Hirsh, S., McDonald, K. C. & McNeill, K. L. (2021, February). *Transforming teaching through curriculum-based professional learning*. Virtual webinar for Learning Forward.
- Reiser, B. J. & McNeill, K. L. (2020, December). *Supporting teachers in next generation science teaching*. Virtual presentation for annual conference for Learning Forward.
- McNeill, K. L., Affolter, R. & Delaney, S. (2020, May). *Professional learning combined with 3-D curriculum: Enacting OpenSciEd to support student sensemaking*. Virtual presentation for the National Science Teachers Association.
- McNeill, K. L. & Hashimoto-Martell, E. (2019, October). *Curriculum-based professional development: Supporting teacher learning through the use of OpenSciEd curriculum materials*. Invited presentation at the Massachusetts Science Education Leadership Association (MSELA), Marlborough, MA.
- McNeill, K. L. (2019, February). *Resources for investigation and design*. Invited panel presentation at the National Academies of Sciences, Engineering and Medicine, Washington DC.
- McNeill, K. L. & Hashimoto-Martell, E. (2018, October). *OpenSciEd: Using science storylines to create high-quality science learning experiences for all students*. Invited presentation at the Massachusetts Science Education Leadership Association (MSELA), Marlborough, MA.
- McNeill, K. L. (2018, April). *Transitioning to the Next Generation Science Standards: Shifting classrooms to support students in science practices*. Keynote address at the Rhode Island Science Teachers Association annual meeting, East Greenwich, RI.
- McNeill, K. L. & Lowenhaupt, R. (2018, February). *Building capacity for the supervision of science: Using the science practices as a lever for change*. Invited presentation for New England State Science Supervisors, Web Seminar.
- McNeill, K. L. (2017, June). *Building school and district capacity for the Next Generation Science Standards*. Invited presentation at the National Academies of Sciences, Engineering and Medicine, Washington DC.
- McNeill, K. L. & Meuse, E. (2017, May). *How do I promote student discourse?* Invited presentation at National Science Teachers Association (NSTA) Web Seminar.
- McNeill, K. L. (2016, October). *Instructional leadership for science practices: Supporting teachers in transitioning to the new science standards*. Invited presentation at the Massachusetts Science Education Leadership Association (MSELA), Marlborough, MA.
- McNeill, K. L. (2016, September). *Promoting explanation and argumentation in science instruction: Investigating supports for students and teachers*. Invited presentation at IPN, Kiel, Germany.
- McNeill, K. L. (2016, April). *Shifting afterschool to a focus on science practices*. Invited presentation at Afterschool Alliance webinar series.
- McNeill, K. L. (2016, February). *Why scientific argumentation?* Invited virtual presentation for Stanford University, Stanford, CA.
- McNeill, K. L. (2016, February). *Multimedia educative curriculum materials designed to support teachers and students in scientific argumentation*. Invited presentation at Concord Consortium, Concord, MA.
- McNeill, K. L. (2016, January). *Designing multimedia tools and educative curriculum materials to supporting teachers' PCK of scientific argumentation*. Invited presentation at Tufts University, Medford, MA.

- McNeill, K. L. (2015, December). *Multimedia educative curriculum materials: Supporting (and assessing) teachers' PCK of scientific argumentation*. Invited presentation at Biological Sciences Curriculum Study (BSCS), Colorado Springs, CO.
- McNeill, K. L. (2015, November). *Creating a classroom culture prioritizing science practices to meet the new science standards*. Keynote address at the Massachusetts Association of Science Teachers, Boxborough, MA.
- McNeill, K. L. (2015, May). *Designing classrooms for science practices: Strategies from research on scientific argumentation*. Keynote address at the STEM Education Summit, University of New Hampshire, Durham, NH.
- McNeill, K. L. (2014, October). *Shifting classroom instruction to focus on science as a practice: Lessons learned from supporting k-12 students in scientific argumentation*. Keynote address at the Maine Science Teachers Association annual meeting, Augusta, ME.
- McNeill, K. L. & Berland, L. (2014, July). *Supporting scientific practices: K-8 students arguing, explaining and modeling*. Invited presentation at the Smithsonian Institution, Washington, DC.
- McNeill, K. L. (2012, November). *Teachers' scientific argumentation instruction: Factors that impact instructional practices during a curriculum enactment*. Invited presentation at Michigan State University, East Lansing, MI.
- McNeill, K. L. & Berland, L. K. (2012, November). *Preparing for NGSS: Constructing explanations and designing solutions*. Invited presentation at National Science Teachers Association (NSTA) Web Seminar.
- McNeill, K. L. & Katsh-Singer, R. (2012, June). *Supporting students in justifying their claims with evidence in science talk and writing*. Invited presentation at Denver Public Schools, Denver, CO.
- McNeill, K. L. (2010, December). *Supporting meaning making in science: The role of scientific inquiry, argumentation and the use of evidence in science learning*. Invited presentation at Cary Institute of Ecosystem Studies, Millbrook, NY.
- McNeill, K. L. (2010, October). *Promoting scientific practices: Developing learning environments to support students in constructing arguments to explain phenomena*. Invited presentation at Syracuse University, Syracuse, NY.
- McNeill, K. L. (2010, February). *Explanation and argumentation: Supporting claims with evidence and reasoning*. Invited presentation at Worcester Polytechnic Institute, Worcester, MA.
- McNeill, K. L. (2009, August). *Performance expectations: What counts as student "understanding" in science?* Invited presentation at The Massachusetts Board of Education Science and Technology/Engineering Review Panel Meeting. Marlboro, MA.
- McNeill, K. L. (2009, May). *Supporting students in using evidence and reasoning in scientific explanations and arguments*. Invited presentation at STEM Education Institute at the University of Massachusetts Amherst, MA.
- McNeill, K. L. (2008, April). *Designing middle school science learning environments*. Invited presentation at Rutgers University, New Brunswick, NJ.
- McNeill, K. L. (2008, March). *Supporting students in scientific explanation and argumentation*. International Conference of Professional Development and Student Learning for Innovative Science Curricula. Invited presentation at National Taiwan Normal University, Taipei, Taiwan.
- McNeill, K. L. (2007, June). *Scientific explanations: Supporting middle school students' use of evidence and reasoning in writing explanations in science*. Invited presentation at TERC, Cambridge, MA.

McNeill, K. L., Kuhn, L., Krajcik, J., & Reiser, B. (2006, February). *Learning progressions for scaffolding student participation in scientific explanation and argumentation*. Invited presentation at National Science Foundation, K-12 Math, Science, and Technology Curriculum Developers Conference, Arlington, VA.

## CONFERENCE PAPERS AND PRESENTATIONS

McNeill, K. L., Affolter, R., Lowell, B. R., Gonzalez, C. & Cherbow, K. (2021, April). *Curriculum-based professional development to support teachers' vision of recent shifts in science instruction*. Paper presented at the annual meeting of NARST: A worldwide organization for improving science teaching and learning through research. Virtual.

Lowell, B. R., Cherbow, K. & McNeill, K. L. (2021, April). *Using a discussion types framework to support collective sensemaking*. Paper presented at the annual meeting of NARST: A worldwide organization for improving science teaching and learning through research. Virtual.

Lee, S., Anderson, S., Mendez Perez, K., McNeill, K. L. (2021, April). *Evaluating Educative Features for Emergent Multilingual Learners' Opportunities to Learn and Support for Three-dimensional Science and Language instruction*. Paper presented at the annual meeting of NARST: A worldwide organization for improving science teaching and learning through research. Virtual.

Cherbow, K. & McNeill, K. L. (2021, April). *Teacher planning for epistemic agency in discussion-based, storyline unit lessons*. Paper presented at the annual meeting of NARST: A worldwide organization for improving science teaching and learning through research. Virtual.

Short, J., Hirsh, S., McDonald, K. C. & McNeill, K. L. (2021, April). *Curriculum Embedded Professional Learning*. Symposium presented at the annual meeting of the Council of State Science Supervisors.

Lowell, B. R. & McNeill, K. L. (2020, June). *Using the student hat to push on multiple goals in teacher professional learning*. Paper virtually presented at the International Conference of the Learning Sciences, Nashville, TN.

Lowell, B. R., Cherbow, K., McNeill, K. L., Affolter, R. A., & Gonzalez, C. (2020, April). *What's the point of this talk?: Enactment of multiple discussion types to support epistemic agency* Paper accepted at the annual meeting of the American Educational Research Association (AERA), San Francisco, CA. (Conference canceled)

McNeill, K. L., Affolter, R., Lowell, B. R., Gonzalez, C. & Cherbow, K. (2020, March). *Supporting teachers' vision of science instruction through professional development for reform-based curriculum materials*. Paper at the annual meeting of NARST: A worldwide organization for improving science teaching and learning through research. Portland, OR. (Conference canceled)

Gonzalez, C. & McNeill, K. L. (2020, March). *Teachers' interpretations and enactments of storyline curriculum*. Poster accepted at the annual meeting of NARST: A worldwide organization for improving science teaching and learning through research. Portland, OR. (Conference canceled)

Cherbow, K. & McNeill, K. L. (2020, March). *Teacher learning and planning for epistemic agency in storyline discussions*. Paper accepted at the annual meeting of NARST: A worldwide organization for improving science teaching and learning through research. Portland, OR. (Conference canceled)

Loper, S. J., Goss, M. & McNeill, K. L. (2019, April). *Educative curriculum material to support in-service, science teachers' learning about argumentation*. Paper presented at the annual meeting of the American Educational Research Association, Toronto, Canada.

McNeill, K. L. (2019, April) *Achieving more powerful research impacts through dissemination and engagement with varied audiences*. Panel presentation at the annual meeting of NARST: A worldwide organization for improving science teaching and learning through research. Baltimore, MD.

McNeill, K. L., Cherbow, K., Lowell, B. R. & Lowenhaupt, R. (2019, April) *Supporting k-8 principals' vision of science instruction: Shifting towards science as practice through professional development*. Paper presented at the annual meeting of NARST: A worldwide organization for improving science teaching and learning through research. Baltimore, MD.

Lowell, B. R., Cherbow, K & McNeill, K. L. (2019, April) *Assessing curriculum for NGSS alignment: Oversimplification of cognitive load and separation of the three dimensions*. Paper presented at the annual meeting of NARST: A worldwide organization for improving science teaching and learning through research. Baltimore, MD.

Lowenhaupt, R., Lowell, B. R., Cherbow, K. & McNeill, K. L. (2018, November). *Preparing principals for innovating in science supervision: Leadership Content Knowledge to support science reform*. Paper presented at the annual meeting of the University Council for Educational Administration, Houston, TX.

Berland, L. K. & McNeill, K. L. (2018, June). *How can personal experiences be leveraged as "scientific evidence" in k-12 classrooms?* Paper presented at the International Conference of the Learning Sciences, London, UK.

Marco-Bujosa, L., McNeill, K. L. & Friedman, A. (2018, April). *Becoming an urban science teacher: An exploration of beginning teacher identity and agency*. Paper presented at the annual meeting of the American Educational Research Association, New York City, NY.

Cherbow, K., McKinley, M., McNeill, K. L. & Lowenhaupt, R. (2018, March). *Current k-8 science instruction: Similarities and differences with the science practices*. Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST), Atlanta, GA.

McNeill, K. L. & Lowenhaupt, R. (2018, March). *Instructional leaders views of "good" science instruction: Moving from general pedagogy and hands on to the science practices*. Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST), Atlanta, GA.

González-Howard, M. & McNeill, K. L. (2018, March). *Framing goals for argumentation discussions: Individual versus communal understanding*. Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST), Atlanta, GA.

McNeill, K. L., González-Howard, M., Marco-Bujosa, L., Loper, S., & O'Dwyer, L. (2017, April). *An examination of how teachers' beliefs about scientific argumentation are impacted by multimedia educative curriculum materials (MECMs)*. Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST), San Antonio, TX.

González-Howard, M., & McNeill, K. L. (2017, April). *Variation in how teachers support student critique in argumentation discussions*. Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST), San Antonio, TX.

Marco-Bujosa, L., McNeill, K. L., González-Howard, M., & Loper, S. (2017, April). *Teacher learning from an educative reform-oriented science curriculum: An exploration of teacher curriculum use*. Paper presented at the annual meeting of the National Association for Research in Science Teaching (NARST), San Antonio, TX.

Lowenhaupt, R., & McNeill, K. L. (2017, April). *Supervision in context: Instructional leadership for K-8 science*. Paper presented at the annual meeting of the American Educational Research Association (AERA), San Antonio, TX.

Lowenhaupt, R., Katsh-Singer, R., McNeill, K. L. & Fagan, K. (2016, November). *Instructional leadership for k-8 science: Measuring leadership content knowledge for science practices (LCK-SP)*. Paper presented at the annual meeting of the University Council for Educational Administration, Detroit, MI.

Winokur, J., McNeill, K. L., Manz, E., Pelletier, P. & DeRosa, D. (2016, November). *Preparing to teach STE in elementary schools: A discussion for stakeholders*. Symposium presented at the Massachusetts STEM Summit, Worcester, MA.

Loper, S., Bopardikar, A., Carlson, J., Kimber, E., McNeill, K. L., Roblin, N., P., & Rostovtseva, T. (2016, September). *Video use for teacher learning*. Symposium presented at the annual meeting of the International Society for Design and Development in Education (ISDDE), Utrecht, the Netherlands.

McNeill, K.L., Marco-Bujosa, L. M., González-Howard, M., Loper, S. (2016, April). *Curriculum implementation for scientific argumentation: Fidelity to procedure versus fidelity to goal*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Baltimore, MD.

Katsh-Singer, R., McNeill, K. L., Fagan, K. & Lowenhaupt, R. J. (2016, April). *Defining and measuring leadership content knowledge (LCK) for science practices*. Poster presented at the annual meeting of the National Association for Research in Science Teaching, Baltimore, MD.

Katsh-Singer, R. & McNeill, K. L. (2016, April). *NGSS and scientific argumentation: District leaders' beliefs and PCK*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Baltimore, MD.

McNeill, K.L., Katsh-Singer, R., Fagan, K. & Lowenhaupt, R. J. (2016, April). *Principals' views of "good" science instruction: General pedagogy, hands on science, or science practices*. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.

González-Howard, M. & McNeill, K. L. (2016, April). *Student engagement in scientific argumentation in a sheltered English instruction classroom community*. Poster presented at the annual meeting of the American Educational Research Association, Washington, DC.

Lowenhaupt, R. J., Fagan, K., Katsh-Singer, R. & McNeill, K. L. (2016, April). *The need for k8 science supervision: Instructional leadership in the era of reform*. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.

González-Howard, M. & McNeill, K. L. (2016, April). *Using social network analysis to examine instructional patterns in scientific argumentation*. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.

McNeill, K. L. & Loper, S. (2015, September). *Multimedia educative curriculum materials for supporting teachers' PCK of scientific argumentation*. Presentation at the annual meeting of the International Society for Design and Development in Education (ISDDE), Boulder, CO.

González-Howard, M. & McNeill, K. L. (2015, April). *Expanding metrics of equity: An exploration of how classroom structures relate to English-language learning students engagement in scientific discourse*. Paper presented at the annual meeting of the New England Educational Research Organization, Portsmouth, NH.

McNeill, K. L. & Berland, L. K. (2015, April). *Design heuristics to enable students productive use of evidence in k-12 classrooms*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Chicago, IL.

González-Howard, M. & McNeill, K. L. (2015, April). *Successes and challenges experienced by a teacher and her students engaging in scientific argumentation in a sheltered English immersion*

*classroom*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Chicago, IL.

McNeill, K. L. (2015, April). *Supporting teachers in teaching scientific practices: Designing in-person and digital learning environments for teachers*. Symposium member at the annual meeting of the National Association for Research in Science Teaching, Chicago, IL.

Henderson, B., Fenton, C. Pearson, P. D, McNeill, K. L. & Barber, J. (2015, April). *DiALoG: A practice instrument designed for the assessment of verbal classroom argumentation in real time*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Chicago, IL.

Katsh-Singer, R., Knight, A. M, González-Howard, M. & McNeill, K. L. (2015, April). *Designing a measure of teacher belief about student ability to engage in scientific argumentation*. Poster presented at the annual meeting of the National Association for Research in Science Teaching, Chicago, IL.

Loper, S., McNeill, K. L., Peck, P., Price, J. & Barber, J. (2014, June). *Multimedia educative curriculum materials: Designing digital supports for learning to teach scientific argumentation*. Paper presented at the International Conference of the Learning Sciences, Boulder, CO.

González-Howard, M. & McNeill, K. L. (2014, June). *Intersections of science learning and language development within scientific argumentation: Implications for English language learners*. Poster presented at the International Conference of the Learning Sciences, Boulder, CO.

Katsh-Singer, R., McNeill, K. L. & Loper, S. J. (2014, April). *Scientific argumentation and the beliefs of teachers in low and high socioeconomic status schools*. Paper presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.

Ryu, S., Cannady, M, McNeill, K. L., & Pearson, P. D. (2014, April). *Middle school students' epistemic ideas of claim, data, evidence and justification when reading arguments*. Paper presented at the annual meeting of the American Educational Research Association, Philadelphia, PA.

McNeill, K. L., González-Howard, M., Katsh-Singer, R. & Loper, S. (2014, March). *Measuring pedagogical content knowledge of argumentation through the development of a teacher argumentation assessment*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Pittsburgh, PA.

Katsh-Singer, R., McNeill, K. L. & Loper, S. (2014, March). *Scientific argumentation for all? The relationship between teacher beliefs about argumentation and student socioeconomic status*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Pittsburgh, PA.

Knight, A. M., Alves, C. B., Cannady, M., McNeill, K. L. & Pearson, P. D. (2014, March). *Assessing middle school students' abilities to critique scientific arguments*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Pittsburgh, PA.

Knight, A. M., McNeill, K. L., & Pearson, P. D. (2014, March). *Students' abilities to critique scientific arguments based on the forms of justification*. Poster presented at the annual meeting of the National Association for Research in Science Teaching, Pittsburgh, PA.

McNeill, K. L., González-Howard, M. Katsh-Singer, R., Price, J. F. & Loper, S. (2013, April). *Teachers' beliefs and practices around argumentation during a curriculum enactment*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Puerto Rico.

McNeill, K. L. (2013, April). *Reflections from contemporary scholars on the influence of past JRST articles*. Invited panel member at the annual meeting of the National Association for Research in Science Teaching, Puerto Rico.

- Ryu, S., Corrigan, S., Knight, A. M., McNeill, K. L. (2013, April). *Assessing students' ability to argue across modalities*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Puerto Rico.
- McNeill, K. L., Katsh-Singer, R., González-Howard, M., Price, J. F., & Loper, S. (2013, April). *Factors that impact teachers' argumentation instruction in their classroom*. Poster presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Knight, A. M., McNeill, K. L., Corrigan, S. & Barber, J. (2013, April). *Assessments for reading and writing scientific arguments*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Price, J. F., Loper, S. J., Barber, J. & McNeill, K. L. (2013, April). *Negotiating tensions in designing multimedia educative curriculum materials*. Poster presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Katsh-Singer, R., McNeill, K. L., & Loper, S. (2013, April). *Scientific argumentation at the beliefs of teachers in low and high SES schools*. Paper presented at the annual meeting of the New England Educational Research Organization, Portsmouth, NH.
- McNeill, K. L., Corrigan, S., Barber, J., Goss, M., & Knight, A. M. (2012, March). *Designing student assessments for understanding, constructing and critiquing arguments in science*. Poster presented at the annual meeting of the National Association for Research in Science Teaching, Indianapolis, IN.
- McNeill, K. L. (2012, March). *Early career and junior faculty discussion*. Invited panel member at the annual meeting of the National Association for Research in Science Teaching, Indianapolis, IN.
- Pimentel, D. S. & McNeill, K. L. (2012, March). *Secondary science teacher beliefs about talk during whole-class discussions*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Indianapolis, IN.
- Knight, A. M. & McNeill, K. L. (2012, March). *Comparing students' written and verbal scientific arguments*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Indianapolis, IN.
- Berland, L. K. & McNeill, K. L. (2012, March) *For whom is argument and explanation a necessary distinction?* Paper presented at the annual meeting of the National Association for Research in Science Teaching, Indianapolis, IN.
- McNeill, K. L. (2012, March). *State education agencies and the next generation science standards*. Invited panel member at the annual meeting of the Council of State Science Supervisors. Indianapolis, IN.
- McNeill, K. L. & Knight, A. M. (2011, April). *The effect of professional development on teachers' beliefs and pedagogical content knowledge for scientific argumentation*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Orlando, FL.
- Knight, A.M., & McNeill, K. L. (2011, April). *The relationship between teachers' pedagogical content knowledge and beliefs of scientific argumentation on classroom practice*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Orlando, FL.
- DeLisi, J., McNeill, K. L., & Minner, D. (2011, April). *Illuminating the relationship between inquiry science instruction and student learning: Results from three case studies*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Orlando, FL.
- Price, J. F. & McNeill, K. L. (2011, April). *Negotiating meaning across communities in the science curriculum*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA.

- McNeill, K. L. & Knight, A. M. (2010, June). *Teachers' pedagogical content knowledge of students' science writing and talk*. Poster presented at the International Conference of the Learning Sciences (ICLS), Chicago, IL.
- McNeill, K. L., Pimentel, D. S., & Strauss, E. G. (2010, June). *The effect of teachers' beliefs and curricular enactments on student learning in high school science*. Poster presented at the International Conference of the Learning Sciences (ICLS), Chicago, IL.
- Hashimoto-Martell, E. A., McNeill, K. L., & Hoffman, E. M. (2010, May). *The impact of an urban ecology course on students' scientific learning, environmental awareness and stewardship*. Paper presented at the annual meeting of the American Educational Research Association, Denver, CO.
- McNeill, K. L. (2010, March). *Explanation, argument and evidence in science, science class and the everyday lives of fifth grade students*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Philadelphia, PA.
- Pimentel, D. S. & McNeill, K. L. (2010, March). *Discourse in science classrooms: The relationship between teacher perceptions and their practice*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Philadelphia, PA.
- Houle, M. E., Nolasco, M., & McNeill, K. L. (2010, March). *Investigating the influence of teachers' orientations toward curriculum materials on enactment*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Philadelphia, PA.
- Berland, L. K. & McNeill, K. L. (2009, June). *Learning progression to inform scientific argumentation in talk and writing*. Paper presented at the Learning Progression in Science conference, Iowa City, IA.
- Price, J. F. & McNeill, K. L. (2009, June). *Web 2.0 supporting dialogic and hermeneutic activities in science curriculum*. Paper presented at the annual meeting of the National Educational Computing conference, Washington, DC.
- Pimentel, D. S. & McNeill, K. L. (2009, May). *Teacher discourse and science talk*. Paper presented at the annual meeting of the New England Educational Research Organization, Portsmouth, NH.
- Price, J. F. & McNeill, K. L. (2009, May). *Reflecting on the urban ecology curriculum: Engaging students and teachers in dialogue and hermeneutics with technology*. Paper presented at annual meeting of the New England Educational Research Organization, Portsmouth, NH.
- McNeill, K.L. & Pimentel, D. S. (2009, April). *Scientific discourse in urban classrooms: The role of the teacher in engaging students in argumentation*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.
- Piazza, P., McNeill, K. L., & Hittinger, J. (2009, April). *Developing a voluntary teacher community: The role of professional development, collaborative learning and conflict*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.
- Krajcik, J. & McNeill, K. L. (2009, April). *Designing instructional materials to support students in writing scientific explanations: Using evidence and reasoning across the middle school years*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Garden Grove, CA.
- McNeill, K. L. (2009, March). *A learning progression to support students in justifying their claims with evidence and reasoning*. Presentation at the annual meeting of the National Science Teachers Association, New Orleans, LA.

- McNeill, K. L. & Pimentel, D. S. (2008, April). *High school students' use of evidence in argumentation talk in an urban ecology unit*. Poster presented at the annual meeting of the National Association for Research in Science Teaching, Baltimore, MD.
- Gatling, A., McNeill, K. L., Martin, D. & Barnett, M. (2008, April). *Comparison of field and university based science methods courses impact on preservice teachers' views of how students learn science*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Baltimore, MD.
- McNeill, K. L. (2007, April). *The role of the teacher in supporting students in writing scientific explanations*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, New Orleans, LA.
- McNeill, K.L. & Krajcik, J. (2007, April). *Relationship between teacher instructional practices and curricular scaffolds in supporting students in writing scientific explanations*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
- McNeill, K. L. & Kuhn, L. (2006, April). *Sequencing and supporting complex scientific inquiry practices in instructional materials for middle school students: Explanation and argumentation*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, San Francisco, CA.
- Krajcik, J. & McNeill, K. L. (2006, April). *Designing middle school science curriculum materials to foster students' developing deep understanding of key learning goals*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, San Francisco, CA.
- McNeill, K. L. & Krajcik, J. (2006, April). *Supporting students' construction of scientific explanation through generic versus context-specific written scaffolds*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Krajcik, J., McNeill, K. L. & Reiser, B. (2006, April). *A learning goals driven design model for developing science curriculum*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Parkinson, J., Spybrook, J. & McNeill, K. L. (2006, April). *Investigating the context of small classes in kindergarten and its effects on teachers and students*. Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Krajcik, J. & McNeill, K. L. (2006, February). *Supporting secondary students in scientific practices: Using evidence, creating models and constructing explanations*. Paper presented at To Think and Act Like A Scientist: The Roles of Inquiry, Research, and Technology, Lubbock, TX.
- McNeill, K. L., Lizotte, D. J., & Krajcik, J. (2005, April). *Identifying teacher practices that support students' explanations in science*. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.
- Fogleman, J. & McNeill, K. L. (2005, April). *Comparing teachers' adaptations of an inquiry-oriented chemistry unit*. Paper presented at the annual meeting of the American Educational Research Association, Montreal, Canada.
- Hug, B. & McNeill, K. L. (2005, April). *Students' discussions of data: Affordances and constraints of first and second hand experiences*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Dallas, TX.
- McNeill, K. L. & Krajcik, J. (2004, June). *Middle school students' use of evidence and reasoning in writing scientific explanations*. Paper presented at the 33rd Carnegie Symposium on Cognition, Pittsburgh, PA.

McNeill, K. L., Lizotte, D. J, Krajcik, J., & Marx, R. W. (2004, April). *Supporting students' construction of scientific explanations using scaffolded curriculum materials and assessments*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

Lizotte, D. J., McNeill, K. L., & Krajcik, J. (2004, June). *Teacher practices that support students' construction of scientific explanations in middle school classrooms*. Paper presented at the International Conference of the Learning Sciences (ICLS), Santa Monica, CA.

McNeill, K. L., Lizotte, D. J, Harris, C. J., Scott, L. A., Krajcik, J., & Marx, R. W. (2003, March). *Using backward design to create standards-based middle-school inquiry-oriented chemistry curriculum and assessment materials*. Paper presented at the annual meeting of the National Association for Research in Science Teaching, Philadelphia, PA.

Lizotte, D. J, Harris, C. J., McNeill, K. L., Marx, R. W., & Krajcik, J. (2003, April). *Usable assessments aligned with curriculum materials: Measuring explanation as a scientific way of knowing*. Poster presented at the annual meeting of the American Educational Research Association, Chicago, IL.

## WORKSHOPS

McNeill, K. L., & Affolter, R. (2020, April). *OpenSciEd Session: What professional learning resources exist to support teachers in using the OpenSciEd units*. Workshop to be presented at the annual conference of the National Science Teachers Association. Boston, MA. (Conference canceled)

Clinchot, M., McNeill, K. L., & Affolter, R. (2020, April). *OpenSciEd Session: What does the evidence tell us? Engaging students in using evidence to figure out phenomena*. Workshop to be presented at the annual conference of the National Science Teachers Association. Boston, MA. (Conference canceled)

Gonzalez, C., Citrin, M., Cherbow, K., & McNeill, K. L. (2020, April). *OpenSciEd Session: Have we been talking like scientists all along? Grounding in phenomena to notice, support, and engage students' knowledge resources*. Workshop to be presented at the annual conference of the National Science Teachers Association. Boston, MA. (Conference canceled)

McNeill, K. L., Katsh-Singer, R., & Mendes, J. (2020, March). *Building capacity through instructional leadership for science practices*. Workshop to be presented at the annual conference of the Council of State Science Supervisors. Boston, MA. (Conference canceled)

Cherbow, K., Lowell, B.R. & McNeill, K. L. (2019, March). *Supporting instruction in the critiquing science practices: Arguing from evidence and evaluating information*. Workshop presented at the annual conference of the National Science Teachers Association. St. Louis, MS.

Cherbow, K. & McNeill, K. L. (2018, March). *Multimedia tools for supporting K-8 instruction in the NGSS science practices*. Workshop presented at the annual conference of the National Science Teachers Association. Atlanta, GA.

González-Howard, M., McNeill, K. L. & Marco-Bujosa, L. (2018, March). *Engaging in scientific argumentation: How do I support my students in articulating their reasoning?* Workshop presented at the annual conference of the National Science Teachers Association. Atlanta, GA.

McNeill, K. L. & Meuse, E. (2017, May). *Promoting student discourse*. Workshop presented to the Boston Public Schools, Boston, MA.

González-Howard, M., Pelletier, P. & McNeill, K. L. (2017, April). *Learning to integrate science practices in k-12 classroom instruction*. Workshop presented at the annual meeting of the National Science Teachers Association. Los Angeles, CA.

- González-Howard, M., McNeill, K. L. & Loper, S. (2017, April). *Argumentation toolkit: Resources for developing a classroom culture for scientific argumentation*. Workshop presented at the annual meeting of the National Science Teachers Association. Los Angeles, CA.
- Marco-Bujosa, L. & McNeill, K. L. (2017, April). *Introduction to argumentation, using evidence in a card sort*. Workshop presented at the annual meeting of the National Science Teachers Association. Los Angeles, CA.
- McNeill, K., Rosa, H., Pelletier, P., & González-Howard, M. (2016, February – May). *Science practices working group: Designing online professional development*. Workshop series presented to the Boston Public Schools, Boston, MA.
- Grymonpré, K., Kapura, N, McNeill, K. L., Rosa, H. & Pelletier, P. (2016, January). *Tools for planning and assessing with the science practices: Moving your class along a continuum*. Workshop presented to the Boston Public Schools, Boston, MA.
- Henderson, J. B., McNeill, K. L. & Knight, A.M. (2015, April). *Key challenges and future directions for research on scientific argumentation*. Workshop presented at the annual meeting of the National Association for Research in Science Teaching. Chicago, IL.
- McNeill, K. L., González-Howard, M., & Pelletier, P. (2015, March - May). *Teaching and learning with the science and engineering practices*. Workshop series presented to the Boston Public Schools, Boston, MA.
- González-Howard, M. & McNeill, K. L. (2015, March). *I introduced the Claim-Evidence-Reasoning Framework...Now what?* Workshop presented at the annual meeting of the National Science Teachers Association. Chicago, IL.
- McNeill, K. L., Pelletier, P. Martin, D. & Blasi, N. (2015, March). *Supporting k-12 students in argumentation across reading, writing and talking*. Workshop presented at the annual meeting of the National Science Teachers Association. Chicago, IL.
- McNeill, K. L. Pelletier, P. & Rosa, H. (2015, February). *An overview of the science and engineering practices*. Workshop presented to the Boston Public Schools, Boston, MA.
- McNeill, K. L. (2014, October). *Supporting students in scientific argumentation across talking, reading and writing*. Workshop at the Maine Science Teachers Association annual meeting, Augusta, ME.
- McNeill, K. L. & González-Howard, M. (2014, April). *Engaging in science practices: Explanation and argumentation*. Workshop presented at the Museum of Science, Boston, MA.
- Pelletier, P. & McNeill, K. L. (2014, April). *Engaging students in argumentation across elementary, middle school and high school*. Workshop presented at the annual meeting of the National Science Teachers Association. Boston, MA.
- Katsh-Singer, R., Pimentel, D. R., McNeill, K. L., González-Howard, M. (2014, April). *Supporting all students in writing scientific arguments*. Workshop presented at the annual meeting of the National Science Teachers Association. Boston, MA.
- Pimentel, D. R., Knight, A. M. & McNeill, K. L. (2014, April). *Reasoning in argumentation: Helping students apply science concepts*. Workshop presented at the annual meeting of the National Science Teachers Association. Boston, MA.
- McNeill, K. L., Pelletier, P. Martin, D. & Blasi, N. (2014, April). *Supporting k-12 students in argumentation across reading, writing and talking*. Workshop presented at the annual meeting of the National Science Teachers Association. Boston, MA.

McNeill, K. L. & González-Howard, M. (2014, March). *Engaging in argument in science: Supporting students in arguments across writing, talking and reading*. Workshop presented to the Boston Public Schools, Boston, MA.

McNeill, K. L. & Pelletier, P. (2013, January - February). *Engaging in argument in science: Supporting students in constructing and critiquing claims using evidence*. Workshop series presented to the Boston Public Schools, Boston, MA.

McNeill, K. L. & González-Howard, M. (Nov. 2012 – Feb. 2013). *Argumentation in history and science*. Workshop series presented to the Newton Public Schools, Newton, MA.

McNeill, K. L. & Pelletier, P. (2012, October – November). *Engaging in argument in science: Supporting students in constructing and critiquing claims using evidence*. Workshop series presented to the Boston Public Schools, Boston, MA.

McNeill, K. L. & Pelletier, P. (2012, August). *Connecting science and literacy: Using evidence to support claims in talking, writing and reading*. Workshop presented to the Boston Public Schools, Boston, MA.

McNeill, K. L. & Pelletier, P. (2012, March). *Supporting claim, evidence and reasoning (CER) across grades and curricula*. Workshop presented at the annual meeting of the National Science Teachers Association. Indianapolis, IN.

McNeill, K. L. & Krajcik, J. (2012, March). *Claim, evidence, and reasoning: Next steps after introducing the framework*. Workshop presented at the annual meeting of the National Science Teachers Association. Indianapolis, IN.

Zemba-Saul, C., McNeill, K. L., & Hershberger, K. (2012, March). *What's your evidence? Engaging k-5 students in constructing explanations in science*. Workshop presented at the annual meeting of the National Science Teachers Association. Indianapolis, IN.

McNeill, K. L. & Knight, A. M. (2012, February - May). *Course 2: Supporting students with claims, evidence and reasoning in science*. Workshop series presented to Boston Public Schools, Boston, MA.

McNeill, K. L. & Pelletier, P. (2012, January). *Science and literacy: Using evidence to support claims in talking, writing and reading*. Workshop presented to the Boston Public Schools, Boston, MA.

McNeill, K. L., Knight, A. M., & Price, J. F. (2011, November). *Reasoning in science using the CER framework*. Workshop presented to the Waltham Public Schools, Waltham, MA.

Duncan, R. G., Krajcik, J., Fortus, D., McNeill, K. L., & Plummer, J. (2011, April). *Developing and assessing learning progressions in science*. Workshop presented at the annual meeting of the National Association for Research in Science Teaching. Orlando, FL.

McNeill, K.L. & Martin, D. M. (2011, March). *Supporting elementary students in science writing using claims, evidence and reasoning*. Workshop presented at the annual national meeting of the National Science Teachers Association. San Francisco, CA.

McNeill, K.L. & Krajcik, J. (2011, March). *Claim, evidence and reasoning: Supporting middle school students in evidence-based scientific explanations*. Workshop presented at the annual national meeting of the National Science Teachers Association. San Francisco, CA.

McNeill, K.L. & Krajcik, J. (2011, March). *Supporting grades 5-8 students in constructing explanations in science: The claim, evidence, and reasoning framework for talk and writing*. Workshop presented at the annual national meeting of the National Science Teachers Association. San Francisco, CA.

- McNeill, K. L. & Knight, A. M. (2011, January - May). *Course 2: Supporting k-12 students with claims, evidence and reasoning in science*. Workshop series presented to Boston Public Schools, Boston, MA.
- McNeill, K. L. & Knight, A. M. (2011, January - March). *Course 1: Supporting k-8 students with claims, evidence and reasoning in science*. Workshop series presented to Boston Public Schools, Boston, MA.
- McNeill, K. L. & Knight, A. M. (2010, October - 2011, April). *Supporting students in science thinking and writing*. Workshop series presented at Oakhill Middle School, Newton, MA
- McNeill, K. L. & Martin, D.M. (2010, March). *Demystifying data through claims, evidence and reasoning: Bridging the gap between elementary science and literacy*. Workshop presented at the National Science Teachers Association Research Dissemination Conference on Keeping Elementary Science Primary. Philadelphia, PA.
- McNeill, K. L. & Martin, D. M. (2010, March). *Strengthening science writing and inquiry: Helping students develop claims with evidence and reasoning*. Workshop presented at the annual national meeting of the National Science Teachers Association. Philadelphia, PA.
- McNeill, K. L. & Krajcik, J. (2010, March). *Teaching strategies to support middle school students in constructing evidence-based scientific explanations*. Workshop presented at the annual national meeting of the National Science Teachers Association. Philadelphia, PA.
- McNeill, K. L. (2010, February). *Middle school students and science writing: Supporting claims with evidence and reasoning*. Workshop presented at Brown Middle School, Newton, MA.
- McNeill, K. L. & Knight, A. M. (2010, January - March). *Supporting elementary students in science thinking and writing: Justifying claims with evidence and reasoning in science*. Workshop series presented to Boston Public School teachers, Boston, MA.
- McNeill, K. L. & Knight, A. M. (2009, December – 2010, February). *Supporting high school students in science thinking and writing: Justifying claims with evidence and reasoning in science*. Workshop series presented to Boston Public School teachers, Boston, MA.
- McNeill, K. L. & Knight, A. M. (2009, September - December). *Supporting middle school students in science thinking and writing: Justifying claims with evidence and reasoning in science*. Workshop series presented to Boston Public School teachers, Boston, MA.
- McNeill, K. L. (2009, September). *Supporting middle school students in writing arguments across the content areas*. Workshop presented at the Rafael Hernandez Two-Way Bilingual School, Boston, MA.
- McNeill, K. L. & Krajcik, J. (2009, March). *Supporting and assessing English language learners in writing scientific explanations*. Workshop presented at the National Science Teachers Association Conference on Science Assessment, Literacy and the English Language Learner. New Orleans, LA.
- McNeill, K. L. (2008, December). *Strategies to support high school students in writing scientific explanations*. Workshop presented at the Dorchester Education Complex, Boston, MA.
- McNeill, K. L. (2008, August). *Assessing students' content knowledge and scientific reasoning through written explanations*. Workshop presented at the Geneticist-Educator Network of Alliances (GENA) summer workshop, Montclair, NJ.
- McNeill, K. L. (2008, August). *Supporting students in science writing: Writing arguments that include claims justified with evidence and reasoning*. Workshop presented at the Rafael Hernandez Two-Way Bilingual School, Boston, MA.

McNeill, K. L. & Krajcik, J. (2008, July). *Assessing students' content knowledge and scientific reasoning through written explanations*. Workshop presented at the Geneticist-Educator Network of Alliances (GENA) summer workshop, Washington, DC.

Krajcik, J., McNeill, K. L., & Novak, A. (2008, March). *Assessing middle school students' content knowledge and scientific reasoning through written explanations*. Workshop presented at the National Science Teachers Association Conference on Science Assessment, Boston, MA.

Krajcik, J. & McNeill, K. L. (2008, March). *Designing learning progressions in science education*. Workshop presented at National Taiwan Normal University, Taipei, Taiwan.

McNeill, K. L. & Krajcik, J. (2007, August). *Assessing students' content knowledge and scientific reasoning through written explanations*. Workshop presented at the Geneticist-Educator Network of Alliances (GENA) summer workshop, Bethesda, MD.

Krajcik, J. & McNeill, K. L. (2007, March). *Assessing middle school students' content knowledge and scientific reasoning through written explanations*. Workshop presented at the National Science Teachers Association Conference on Science Assessment, St. Louis, MO.

Krajcik, J. & McNeill, K. L. (2006, April). *Assessing middle school students' content knowledge and scientific reasoning through written explanations*. Workshop presented at the National Science Teachers Association Conference on Science Assessment, Anaheim, CA.

Krajcik, J. & McNeill, K. L. (2005, November). *Assessing middle school students' content knowledge and scientific reasoning through written explanations*. Workshop presented at the National Science Teachers Association Conference on Science Assessment, Chicago, IL.

Sutherland, L.M., McNeill, K.L., Krajcik, J. & Colson, K. (2005, April). *Supporting students in creating scientific explanations*. Workshop presented at the National Science Teachers Association Conference on Linking Science and Literacy in the Classroom, Dallas, TX.

Sutherland, L.M., McNeill, K.L., & Colson, K. (2004, November). *Supporting students in creating scientific explanations*. Workshop presented at the National Science Teachers Association Conference on Linking Science and Literacy in the Classroom, Seattle, WA.

## MEMBERSHIPS

National Association for Research in Science Teaching, since 2002

American Educational Research Association, since 2002

International Society of the Learning Sciences, since 2003

National Science Teachers Association, since 2006

## PROFESSIONAL SERVICE

Associate Editor for the *Journal of Research in Science Teaching (JRST)*, 2011 to 2015. 2020 – 2025.

Member of the NEXUS Leadership Team to support the Massachusetts Department of Elementary and Secondary Education science & technology standards implementation plan, 2018 – present.

Editorial Board Member for the journal *Science Education*, 2016 – present.

Member of the NARST Early Career Research Award Selection Committee, 2015 – 2016. 2019 – 2022.

Member of the Board of Directors for the National Association for Research in Science Teaching (NARST), 2016 – 2019.

Member of the panel to revise the Massachusetts Science and Technology/Engineering Curriculum Framework, 2009 to 2015.

Member of the *Next Generation Science Standards (NGSS)*, Lead State Advisory Group for Massachusetts, 2011 to 2013.

Primary reviewer for the *Next Generation Science Standards (NGSS)*, 2011 to 2013.

Member of a Delphi Panel organized by the Stanford University Center to Support Excellence in Teaching (CSET) to identify effective instructional practices in science classrooms. 2012.

Member of the National Association for Research in Science Teaching (NARST) committee for the best journal article published in the *Journal of Research in Science Teaching (JRST)*, 2009 to 2012.

Review applications for the International Conference of the Learning Sciences (ICLS) Doctoral Consortium Workshop, 2012.

Member of the National Association for Research in Science Teaching (NARST) publications committee, 2008 to 2009.

Review science assessment items for content validity for the Massachusetts Test for Education Licensure (MTEL), 2008.

Member of the National Science Teachers Association Awards Subcommittee, 2002 & 2003

#### Review Journal Articles

- *Journal of Research in Science Teaching*, 2005 to present
- *International Journal of Research in Science Teaching*, 2006 to present
- *Journal of the Learning Sciences*, 2006 to present
- *Science Education*, 2006 to present
- *The Elementary School Journal*, 2008 to present
- *Science*, 2010 to present
- *Research in Science Education*, 2010 to present

#### Review Grant Proposals

- Review National Science Foundation (NSF) grant proposals. 2008, 2012, 2014-2016. 2019-2020.
- Review Institute of Education Sciences (IES) grant proposals. 2015-2018.
- Review Carnegie Corporation of New York grant proposals. 2017.
- Review Israel Science Foundation (ISF) grant proposals. 2007, 2009 & 2011.

#### Review Conference Proposals

- Annual Meeting for the National Association for Research in Science Teaching, 2002 to present
- Annual Meeting for the American Educational Research Association, 2003 to present
- International Conference for the Learning Sciences, 2003 to present

#### Advisory Boards

- Advisor for a NSF DRK12 awarded to American Institutes for Research titled – *Advancing methods and synthesizing research in STEM education*. 2020-2021.
- Member of the advisory board for a NSF DRK12 awarded to New York University titled – *Professional development to support an elementary school science and integrated language (SAIL) curriculum*. 2020-2024.
- Member of the advisory board for a NSF DRK12 awarded to the Maine Mathematics and Science Alliance titled – *Place-Based learning for elementary science at scale (PeBLES2)!*, 2020-2024.
- Member of the advisory board for a NSF DR-K12 awarded to University of Nevada, Las Vegas titled – *Collaborative research for the development of M-PLANS (Motivation – Planning Lessons to Activate to eNgagement in Science)*, 2018-2022.

- Member of the advisory board for a NSF RAPID awarded to the University of North Carolina at Chapel Hill titled – *Responding to an emerging epidemic through science education*, 2020-2021.
- Member of the advisory board for a NSF DR-K12 awarded to Concord Consortium titled – *Connected biology: Three dimensional learning from molecules to populations*. 2016-2020.
- Member of the advisory board for a NSF DR-K12 awarded to Arizona State University and the Lawrence Hall of Science titled – *Supporting teacher practice to facilitate and assess oral scientific argumentation: Embedding a real-time assessment of speaking and listening into an argumentation-rich curriculum*. 2016-2020.
- Member of the advisory board for a NSF DR-K12 awarded to ETS entitled - *Developing preservice elementary teachers' ability to facilitate goal-oriented discussions in science and mathematics via the use of simulated classroom interactions*. 2016-2020.
- Member of the advisory board for a Chan Zuckerberg Initiative grant awarded to West Ed titled – *Next Generation Science Assessment*. 2019.
- Member of the advisory board for a NSF DR-K12 awarded to Education Development Center (EDC) entitled – *Zoom in! Teaching Science with Data*, 2016 – 2019.
- Member of the advisory board for a NSF EHR Core Research (ECR) awarded to Biological Sciences Curriculum Study (BSCS), – *Applying Automated Analysis to a Learning Progression for Argumentation*, 2016 – 2019.
- Member of the advisory board for a NSF IUSE awarded to Syracuse University entitled – *ELEM-SIM: Elementary science simulations to advance undergraduate elementary teacher preparation*. 2016-2019.
- Member of the advisory board for a NSF DR-K12 awarded to Biological Sciences Curriculum Study (BSCS), – *Three-Dimensional teaching and learning: Rebuilding and researching an online middle school curriculum to support the NGSS*, 2015 – 2019.
- Member of the advisory board for a NSF AISL grant awarded to Education Development Center (EDC) entitled – *What can we learn from middle school science fairs about teaching science and engineering practices?*, 2014-2018.
- Member of the advisory board for a Gordon & Betty Moore Foundation grant awarded to University of Illinois – Chicago, – *Next Generation Science Assessment*, 2016-2017.
- Member of the advisory board for an IMLS grant awarded to the Boston Museum of Science entitled – *Next generation science thinking and innovation for Museum Educators*, 2015 – 2017.
- Member of the advisory board for a NSF DR-K12 grant awarded to the Concord Consortium entitled – *High-Adventure Science: Earth's Systems and Sustainability*, 2012 – 2016.
- Member of the advisory board for a Washington State MSP project awarded to the Seattle Public Schools entitled – *Partnership for Science and Engineering Practices*, 2013-2015.
- Member of the advisory board for a NSF DR-K12 grant awarded to the University of Massachusetts Amherst entitled - *Identifying science teaching strategies for promoting reasoned discussions of concepts and simulations*, 2012 – 2015.
- Member of the advisory board for a Bill and Melinda Gates Foundation grant awarded to the Lawrence Hall of Science entitled – *Promoting equitable and accessible science instruction: Extending the Seeds of Science/Roots of Reading curriculum to middle school*, 2010-2014.
- Member of the advisory board for a NSF ITEST grant awarded to Education Development Center, Inc. (EDC) entitled - *Promoting STEM career interests in the classroom: An exploratory study linking teacher professional development with changes in teaching practice*, 2008-2013.

## CONSULTING

Boston Public Schools

2009 – 2018

- Advise on the integration and support of science practices, with a focus on argumentation, and the integration of science and literacy.
- Educational Testing Services (ETS) 2013
- Provided feedback on new model of assessment items for the AP Biology exam that simultaneously assess science practices and biology content.
- Australian Academy of Science 2010 - 2012
- Advised Australian Academy of Science on the implementation of argumentation strategies for k-6 students into nine *Primary Connections: Linking science with literacy* curriculum units.
- Knowles Science Teaching Foundation 2012
- Provided feedback on the design of professional development for high school science teachers around scientific argumentation.
- Lawrence Hall of Science, University of California, Berkeley 2009
- Provided feedback on the integration and support of elementary students in constructing scientific explanations in an NSF funded curriculum *Seeds of Science/Roots of Reading*.
- American Society of Human Genetics (ASHG) 2007 - 2008
- Advised ASHG on teacher professional development workshops as part of their NSF funded project, The Geneticist-Educator Network of Alliances (GENA).
- Educational Testing Service (ETS) 2008
- Reviewed a policy report for the NAEP 8<sup>th</sup> grade data to identify teacher characteristics and instructional strategies related to student science achievement using hierarchical linear modeling.
- WGBH Educational Foundation 2007
- Advised WGBH on the development of a children's television series focused on environmental sustainability.
- Merck Institute of Science Education (MISE) 2007
- Reviewed pedagogical content knowledge tools for middle school science teachers around the topics of populations, communities and food chains.
- Institute of Computer Technology and Intel® Innovation in Education 2004
- Advised the design of software to support middle and high school students in the construction of arguments. Designed materials for professional development workshops with teachers.

## SERVICE TO THE UNIVERSITY

- Lynch School of Education Promotion and Tenure Committee 2021 - 2023
- Member of the LSOE Promotion and Tenure Committee
- Doctoral Advisory Committee 2010 - present
- Member of the doctoral advisory committee for the TESECI department.
- LSOE Grant Advisor 2018 - present
- Member of a group of faculty that provide grant support, particularly for early career faculty in the Lynch School of Education (LSOE)
- Search Advisory Committee for Director of the Schiller Institute 2019 - 2020
- Member of the search advisory committee for the inaugural Director of the Schiller Institute of Integrated Science and Society.
- Lynch School of Education Promotion and Tenure Committee 2018 - 2020
- Member of the LSOE Promotion and Tenure Committee

Lynch School of Education Academic Standards Committee	2017 - 2020
• Member of the LSOE Academic Standards Committee	
Faculty Mentor	2014 - 2019
• Mentor for untenured assistant professor for research, teaching and service.	
Teacher Education Task Force	2017 - 2018
• Chair of the teacher education task force with the goal of redesigning the teacher licensure program considering current national changes in teacher education and technological advances.	
CAEP Oversight Committee	2015 - 2018
• Member of the CAEP Oversight Committee to oversee the work of LSOE's CAEP accreditation process over a three year period, 2015-2018.	
Lynch School of Education Technology Committee	2007 - 2016
• Member of the LSOE Technology Committee.	
Sponsored Research Advisory Committee	2012 - 2016
• Member of the advisory committee to discuss strategies and supports for external grants.	
Search Committee for Associate Dean for Research	2014 - 2015
• Member of the search committee for the associate dean of research for LSOE	
Search Committee for Special Education Position	2012 – 2013
• Member of the search committee for the faculty position of special education.	
Commencement Faculty Marshal	2007 - 2010
Earth, Space and Environmental Science Program (ES)2P Committee	2009 – 2010
• Member of the university wide advisory committee to develop a new science program across several departments, schools, institutes and centers at Boston College.	
Center for Catholic Education	2006 – 2010
• Served as a science curriculum consultant for St. Columbkille, Worcester Catholic elementary schools and Providence Catholic middle schools. Provided professional development workshops for teachers around science standards, scientific inquiry, and using science curriculum.	
Undergraduate Advisory Committee	2007 - 2010
• Member of the undergraduate advisory committee for the TESECI department.	
Lynch School of Education Nominating Committee	2008 – 2010
• Member of the LSOE Nominating Committee.	
Teacher Education Accreditation Council (TEAC) Committee	2007 - 2009
• Member of a subcommittee to synthesize evidence for the TEAC accreditation inquiry brief.	
Teachers for a New Era, Collaboration with Arts and Sciences Faculty	2006 – 2008
• Served as the science education point person for collaboration with A&S science faculty.	

## ADVISEES AND STUDENTS' COMMITTEES

### Doctoral Advisees

- Sarah Fogelman, Samuel Lee, Julie Kim, Benjamin Lowell, Katherine Thompson (2021), Kevin Cherbow (2021), Lisa Marco-Bujosa (2018), Maria González-Howard (2017), Rebecca Katsh-Singer (2016), Amanda Knight-Bardsley (2015), Erin Hashimoto-Martell (2014), Diane Silva Pimentel (2012), Jeremy Price (2012)

Active Dissertation Committees for Doctoral Students

- Ahrum Jeon, Casandra Gonzalez, Benjamin Lowell (chair), Melita Morales, Julie Kim, Marisa Olivo, David W. Jackson, Ryan Auster

Completed Dissertation Committees

- Katherine Thompson (chair, 2021), Kevin Cherbow (chair, 2021), Ariella Suchow (2020), Yang (Paul) Xu (2019), Molly Cummings Carney (2019), Juan C. García-Huidobro (2019), Kate Soules (2019), Kyle Fagan (2018), Lisa Marco-Bujosa (chair, 2018), Cynthia Hill (Tufts University, 2018), Courtney Castle (2018), Amie Patchen (2017), María González-Howard (chair, 2017), Rebecca Katsh-Singer (chair, 2016), Amanda Knight (chair, 2015), Kate Ariemma Marin (2015), Jim Haley (2015), Storey Mecoli (2014), Erin Hashimoto-Martell (chair, 2014), Tracy Drysdale (2013), Diane Silva Pimentel (chair, 2012), Jeremy Price (chair, 2012), Shelagh Peoples (2012), Gabrielle Stanco (2012), Ismail Marulcu (2010), Anne Gatling (2010), Meredith Houle (2008)