

## 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

*Associate Professor, Science Education* 2012 - present

*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

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

Lowenhaupt, R. & McNeill, K. L. (in press). Making the case for K–8 science supervision: Subject-specific instructional leadership in an era of reform. *Leadership and Policy in Schools*.

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

González-Howard, M., Marco-Bujosa, L. M., McNeill, K.L., Goss, M. & Loper, S. (in press). The argumentation toolkit: Resources to integrate argumentation into your science classroom. *Science Scope*.

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., 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 McMahon, 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

Zemba-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.

Zemba-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.

## OTHER PAPERS IN PROGRESS

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

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

Loper, S., McNeill, K. L. & Goss, M. (in review). Developing multimedia educative curriculum materials to support middle school science teachers' PCK for argumentation. In Uzzo, S. M., Graves, S., Shay, E., Hartford, M., & Thompson, R. (Eds.). *Pedagogical Content Knowledge in STEM*. New York, NY: Springer.

González-Howard, M., & McNeill, K.L. (in review). Teacher and student roles in supporting critique during argumentation discussions. *Journal of the Learning Sciences*.

González-Howard, M., & McNeill, K.L. (in review). 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*. Charlotte, NC: Information Age Publishing.

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

McNeill, K. L. Lowenhaupt, R., Cherbow, K. & Lowell, B. R. (in preparation). *Professional development to support principals' vision of NGSS that aligns with the science practices*.

Cherbow, K., McKinley, M.T, McNeill, K. L. & Lowenhaupt, R. (in preparation). *Current k-8 science instruction: Similarities and differences with the science practices.*

## CURRICULUM MATERIALS AND WEBSITES

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

<http://www.sciencepracticesleadership.com>

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

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

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

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

**Co-Principal Investigator. *Science Educators for Urban Schools Phase II.*** \$799,980. National Science Foundation – DUE-1439393, September 2014 – August 2019. 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. *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 consists 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

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. (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

- Marco-Bujosa, L., McNeill, K. L. & Friedman, A. (2018, April). *Becoming an urban science teacher: An exploration of beginning teacher identity and agency*. Paper to be 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 to be 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 to be

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 to be 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

- Cherbow, K. & McNeill, K. L. (2018, March). *Multimedia tools for supporting K-8 instruction in the NGSS science practices*. Workshop to be presented at the annual conference of the National Science Teachers Association. Atlanta, GA.
- González-Howard, M., McNeill, K. L. & Loper, S. (2018, March). *Engaging in scientific argumentation: How do I support my students in articulating their reasoning?* Workshop to be 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

Massachusetts Association of Science Teachers, since 2015

## PROFESSIONAL SERVICE

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

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

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

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

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 Carnegie Corporation of New York grant proposals. 2017.
- Review National Science Foundation (NSF) grant proposals. 2008, 2012, 2014-2016.
- Review Institute of Education Sciences (IES) grant proposals. 2015-2018.
- 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

- 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 DR-K12 awarded to Concord Consortium entitled – *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 entitled – *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 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 – present |
| <ul style="list-style-type: none"> <li>• Advise on the integration and support of science practices, with a focus on argumentation, and the integration of science and literacy.</li> </ul>  |                |
| Educational Testing Services (ETS)   | 2013           |
| <ul style="list-style-type: none"> <li>• Provided feedback on new model of assessment items for the AP Biology exam that simultaneously assess science practices and biology content.</li> </ul>   |                |
| Australian Academy of Science  | 2010 - 2012    |
| <ul style="list-style-type: none"> <li>• Advised Australian Academy of Science on the implementation of argumentation strategies for k-6 students into nine <i>Primary Connections: Linking science with literacy</i> curriculum units.</li> </ul> |                |
| Knowles Science Teaching Foundation  | 2012           |
| <ul style="list-style-type: none"> <li>• Provided feedback on the design of professional development for high school science teachers around scientific argumentation.</li> </ul>  |                |

- 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

- Teacher Education Task Force 2017 - present
- 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 - present
- Member of the CAEP Oversight Committee to oversee the work of LSOE's CAEP accreditation process over a three year period, 2015-2018.
- Faculty Mentor 2014 - present
- Member for untenured assistant professor for research, teaching and service.
- Doctoral Advisory Committee 2010 - present
- Member of the doctoral advisory committee for the TESECI department.
- Lynch School of Education Academic Standards Committee 2017 - 2020
- Member of the LSOE Academic Standards Committee
- 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

- Benjamin Lowell, Kevin Cherbow, Katherine Thompson, Lisa Marco-Bujosa, 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

- Ryan Auster, Yang (Paul) Xu, Juan C. García-Huidobro, Kyle Fagan, Lisa Marco-Bujosa (chair), Cynthia Hill (Tufts University), Courtney Castle

### Completed Dissertation Committees

- 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)