

## CATHERINE E. MILNE, Ph. D.

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### EDUCATION

<b>Post-Doctoral Researcher</b>	University of Pennsylvania	2000-2002	Chemistry Education
<b>Doctor of Philosophy</b>	Curtin University	1994-1998	Science Education
<b>Master of Science</b>	Curtin University	1990-1993	Science Education
<b>Bachelor of Science</b>	James Cook University	1974, 1977-1978	Chemistry/Botany
<b>Bachelor of Education</b>	James Cook University	1974-1977	Education

**Masters Thesis Title:** “The pedagogical implications of teacher personal philosophies of science in the school science classroom: an interpretive study.”

**Ph.D. Thesis Title:** “Science cultural myths and school science: a critical analysis of historical and contemporary discourses.”

### PROFESSIONAL EXPERIENCE

2016-	<i>Chair</i> , Department of Teaching and Learning
2015-	<i>Professor</i> , Teaching and Learning
2015-2016	<i>Director</i> , Undergraduate Studies Department of Teaching & Learning
2014	<i>Acting Program Director</i> , Science Education
2008-2015	<i>Associate Professor</i> , Teaching and Learning
2005-	<i>Research Affiliate</i> , CREATE Lab
2002-2008	<i>Assistant Professor</i> , Teaching and Learning
2000-2002	<i>Post-Doctoral Fellow</i> , Department of Chemistry/GSE, University of Pennsylvania
1997-2000	<i>Tertiary Literacies Coordinator</i> , University of Wollongong, Australia
1994-1997	<i>Tutor</i> , Science and Mathematics Education Center (SMEC), <i>Lecturer</i> , Center for Aboriginal Studies, Curtin University, Australia
1993	<i>Assistant Principal</i> , Sanderson High School, Northern Territory, Australia
1992	<i>Research Assistant</i> , SMEC, Curtin University
1985-1992	<i>Science Head of Department</i> , Sanderson High School, Northern Territory, Australia
1980-1984	<i>Science Teacher</i> , <i>Science Head of Department</i> , Darwin High School, Nightcliff High School, Northern Territory, Australia

### HONORS/AWARDS

2013	<i>Fellow</i>	American Association for the Advancement of Science (AAAS)
2009	<i>Outstanding Science Teacher Educator of the Year</i> Level 1: 10 or fewer years in science education	Association for Science Teacher Education (ASTE)
2006	<i>Goddard Award</i>	Steinhardt School of Culture, Education,

2004/2006	Nominated <i>Distinguished Teaching Award</i>	and Human Development Steinhardt School of Culture, Education, and Human Development
2003	<i>Zirin Research Award</i>	Department of Teaching and Learning
1998	Finalist, Doctoral Dissertation Award	National Association for Research in Science Teaching (NARST)
1994-1997	<i>Australian Postgraduate Award</i>	Australian Department of Education
1994	Finalist, Outstanding Masters Thesis Award	NARST
1992	<i>Northern Territory Study Award</i>	Northern Territory Department of Education

#### PROFESSIONAL MEMBERSHIPS:

American Association for the Advancement of Science (AAAS)  
 American Association for Colleges of Teacher Education (AACTE)  
 American Chemical Society (ACS)  
 American Educational Research Association (AERA)  
 European Science Education Research Association (ESERA)  
 International History, Philosophy, and Science Teaching Group (IHPST)  
 National Science Teachers' Association (NSTA)  
 National Association of Biology Teachers (NABT)  
 National Association for Research in Science Teaching (NARST)  
 New York & North Jersey Sections of the ACS

#### PUBLICATIONS

##### Books

- Milne, C.** (2011). *The invention of science: why history of science matters for the classroom*. Dordrecht, The Netherlands: Sense Publishers.
- McVarish, J., & **Milne, C.** (Eds.) (2014). *Teacher educators rethink self-assessment in Higher Education: A guide for the perplexed*. New York: Peter Lang.
- Milne, C.**, Tobin, K., & DeGennero, D. (Eds.) (2015). *Sociocultural studies and implications for science education: The experiential and the virtual*. Springer.

##### Journal Articles

- Kwah, H., **Milne, C.**, Tsai, T., Goldman, R. & Plass, J. (2016). Emotional engagement, social interactions, and the development of an afterschool game design curriculum. *Cultural Studies of Science Education* doi: 10.1007/s11422-014-9621-0
- Milne, C., Siry, C. & Mueller, M. (2015). Reflections on the challenges and possibilities of journal publication in science education. *Cultural Studies of Science Education* 10, 1063-1069. doi:10.1007/s11422-015-9719-z
- Murphy, C., Scantlebury, K. & **Milne, C.** (2015). Using Vygotsky's zone of proximal development to propose and test an explanatory model for conceptualizing co-teaching in pre-service science teacher education. *Asia-Pacific Journal of Teacher Education*, 43(4), 281-295. doi: 10.1080/1359866X.2015.1060291
- Phamduy, P., **Milne, C.**, Leou, M., Porfiri, M. (2015). Interactive robotic fish: A tool for informal science learning and environmental awareness. *IEEE Robotics & Automation Magazine*, 22, 90-95.
- Milne, C.** (2014). Space: The final frontier in the learning of science? *Cultural Studies of Science Education*, 9, 133-139.
- Milne, C.** (2012). Deconstructing games as play: progress, power, fantasy, and self. *Cultural Studies of Science Education*, 7, 761-765.

- Plass, J. L., **Milne, C.**, Homer, B. D., Schwartz, R., Hayward, E. O., Jordan, T., Verkuilen, J., Ng, F., Wang, Y., & Barrientos, J. (2012). Investigating the effectiveness of computer simulations for chemistry learning. *Journal of Research in Science Teaching*, *49*, 394-419.
- Milne, C.** (2011). A convenient dichotomy: critical eyes on the limits to biological knowledge. *Cultural Studies of Science Education*, *6*, 305-310.
- Milne, C.**, & Rubin, K. (2011). Embodying emotions: making transactions explicit in science learning contexts. *Cultural Studies of Science Education*, *6*, 625-633.
- Milne, C.**, Hess Pickett, L., Hartley, S., & Lowe, P. (2011). *SMEC* (her/his)stories. *Cultural Studies of Science Education*, *6*, 757-763.
- Milne, C.**, Scantlebury, K., Blonstein, J., & Gleason, S. (2011). Coteaching and disturbances: Building a better system for learning to teach science. *Research in Science Education*, *41*, 413-440.
- Milne, C.** (2009). Interpretive repertoires as mirrors on society and as tools for action: reflections on Zeyer and Roth's A mirror of society. *Cultural Studies of Science Education*, *4*, 1013-1022.
- Milne, C.** (2009). Assessing self-evaluation in a science methods course: Power, agency, authority and learning. *Teaching and Teacher Education*, *25*, 758-766.
- Milne, C.**, Rubel, L., Rodriguez, A. J., Emdin, C., Rivera Maulucci, M., Locke, D., Tan, E., Clairmont, N. & Upadhyay, B. (2009). Celebrating Jhumki Basu's contributions to science education as a scholar and an activist: voices from the field, *Cultural Studies of Science Education*, *4*, 417-434.
- Plass, J. L., Homer, B. D., **Milne, C.**, Jordan, T., Kalyuga, S., Kim, M., & Lee, H. (2009). Design factors for effective science simulations. *International Journal of Gaming and Computer-Mediated Simulations*, *1*(1), 16-35.
- Milne, C.**, Kirch, S., Basu, S. J., Leou, M., Fraser-Abder, P. (2008). Understanding conceptual change: Connecting and questioning. *Cultural Studies of Science Education*, *4*, 417-434.
- Milne, C.** (2008). The beaks of finches and the tool analogy: Use with care. *American Biology Teacher*, *70*, 153-157.
- Milne, C.** & Ma, J. (2008). Using observation and Rasch analysis to make sense of students' responses to items on the chemistry Regents' exam. *Pedagogical issues in science, mathematics and technology education*. Volume 4. Schenectady, NY: New York Consortium for Professional Development.
- Milne, C.** (2007). On being a science teacher: Identities, emotions, morals, and the dialectics of organic link. *Cultural Studies of Science Education*, *2*, 906-912.
- Milne, C.** & Otieno, T. (2007). Understanding engagement: Science demonstrations and emotional energy. *Science Education*, *91*, 523-553.
- Martin, S., **Milne, C.**, & Scantlebury, K. (2006). Eye rollers, risk-takers, and turn sharks: Target students in a professional science education program, *Journal of Research in Science Teaching*, *43*, 819-851.
- Milne, C.**, Scantlebury, K. & Otieno, T. (2006). Using socio-cultural theory to understand the relationship between teacher change and a science-based professional education program, *Cultural Studies of Science Education*, *1*, 325-352.
- Zembylas, M., Espinet, M., **Milne, C.**, & Scantlebury, K. (2006) Teacher agency, social structures and professional education in science education: Understanding teacher change in terms of agency/structure. *Cultural Studies of Science Education*, *1*, 353-366.
- Milne, Catherine** (2005, August). On Being Authentic: A Response to "No thank you, not today": Supporting ethical and professional relationships in large qualitative studies [8 paragraphs]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* [On-line Journal], *6*(3), Art 38. Available at <http://www.qualitative-research.net/fqs-texte/3-05/05-3-38-e.htm> [Date of Access: Month Day, Year]

- Milne, Catherine** (2005, January). Overseeing research: Ethics and the Institutional Review Board [33 paragraphs]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* [On-line Journal], 6(1), Art. 41. Available at: <http://www.qualitative-research.net/fqs-texte/1-05/05-1-41-e.htm>
- Gribble, S. J., Rennie, L. J., Tyson, L., **Milne, C.** & Speering, W. (2000). Negotiating values for the science curriculum: The need for dialogue and compromise. *Research in Science Education*, 30, 199-211.
- Milne, C.** (1999). "Only some facts matter for my given pattern": The fact of stories in school science. A response to Whitaker. *Journal of Research in Science Teaching*, 36, 1155-1157.
- Milne, C.** (1999). Stories and primary science: The tentativeness of scientific understanding. *Investigating*, 15(3), 14-17.
- Milne, C.**, Wallace, M., & Porter, A. (1999). Coming to terms with statistical literacy: Developing a university-wide introductory program. *Of Significance*, 1, 35-41.
- Venville, G. & **Milne, C.** (1999). Three women scientists and their role in the history of genetics. *Australian Science Teachers Journal*, 45(3), 9-15.
- Milne, C.** (1998). Philosophically correct science stories? Examining the implications of heroic science stories for school science. *Journal of Research in Science Teaching*, 35, 175-187.
- Milne, C.** (1998). Coming to terms with generic skills: Developing an instructional description. *Overview*, 5(1), 3-7.
- Milne, C.** & Taylor, P. C. (1995). Metaphors as global markers for teachers' beliefs about the nature of science, *Research in Science Education*, 25, 39-49.

#### **Papers and Monograph Chapters under Review/in Preparation**

- Milne, C & Scantlebury, K. (Eds.) (under contract) *Material practice and materiality: Too long ignored in Science Education*. Springer.
- Phamduy, P., Leou, M. **Milne, C.** & Porfiri, M. (reviewed). An interactive robotic fish exhibit for designed settings in informal science, *IEEE*.
- O'Keefe, P., Letourneau, S.M., **Milne, C.**, Homer, B.D., Schwartz, R.N., & Plass, J.L. (under review). *Learning from multiple representations: An examination of fixation patterns in a science simulation*.
- Milne, C. & Gilmer, P. (under review). On intellectual openness: The legacy of Ken Tobin. In K. Scantlebury & S. Ritchie (Eds.), *Festschrift in honor of Kenneth Tobin*. Springer.
- Milne, C., Krishnamoorthy, S., Elliot, C., & Scantlebury, K. (under review). Science education as a material issue. In L. Bryan & K. Tobin (Eds.), *13 Questions in Science Education*.
- Milne, C. et al. (submitted for review). Using narrative scaffolds in multimedia simulations for chemistry education: An example from particle theory *Science Education*
- Schwartz, R., **Milne, C.** & Plass, J. (under development). *Supporting chemistry learners: Using visual scaffolds to foster learning using multimedia simulations*
- Milne, C. et al. (under development). *The wicked problem of multimedia simulation integration and the role of scaffolding: A case from high school chemistry*

#### **Book and Monograph Chapters – Peer Reviewed**

- Milne, C. (2015). Beyond the actual: Exploring constructs of reality, knowledge and culture in virtual environments. In C. Milne, K. Tobin, & D. DeGennero (Eds.), *Sociocultural studies and implications for science education: The experiential and the virtual* (pp. 315-325). Dordrecht, The Netherlands: Springer.
- Milne, C. (2015). Cultural influences on science education. In R. Gunstone (Ed.), *Encyclopedia of science education*. Dordrecht, The Netherlands: Springer.

- Milne, C. (2014). The conundrum of self-evaluation as argument. In J. McVarish & C. Milne (Eds.), *Self-assessment and self-evaluation in teacher education: A guide for the perplexed* (pp. 61-78). New York: Peter Lang.
- Milne, C. (2014). Self-assessment and assessment for/as learning. In J. McVarish & C. Milne (Eds.), *Self-assessment and self-evaluation in teacher education: A guide for the perplexed* (pp. 145-148). New York: Peter Lang.
- McVarish, J., & **Milne, C.** (2014). Moving beyond grade-getting with self-assessment. In J. McVarish & C. Milne (Eds.), *Self-assessment and self-evaluation in teacher education: A guide for the perplexed* (pp. 1-14). New York: Peter Lang.
- Milne, C., & McVarish, J. (2014). A model of action for self-assessment and self-evaluation: The nuts and bolts of getting started. In J. McVarish & C. Milne (Eds.), *Self-assessment and self-evaluation in teacher education: A guide for the perplexed* (pp. 29-46). New York: Peter Lang.
- Schwartz, R. N., **Milne, C.**, Homer, B. D., & Plass, J. (2013). Designing and implementing effective animations and simulations for chemistry learning. In J. P. Suits & M. J. Sanger (Eds.), *Pedagogic roles of animations and simulations in Chemistry courses* (pp. 43-76). Washington, DC: American Chemical Society.
- Milne, C. (2013). *Creating stories from history of science to problematize scientific practice: A case study of boiling points, air pressure, and thermometers*. Conference paper for IHPST Meeting, Pittsburgh, June 19-22.
- Milne, C. (2012). What is science? In Vaille Dawson & Grady Venville (Eds.), *The art of teaching science* (pp. 3-22). Allen and Unwin.
- Milne, C. (2012). Beyond argument: Science education as separate and connected knowing. In B. Fraser, K. Tobin, & C. McRobbie (Eds.), *Second international handbook of science education* (pp. 951-967). Dordrecht, The Netherlands: Springer.
- Olitsky, S., & **Milne, C.** (2012). Understanding engagement in science education: The psychological and the social. In B. Fraser, K. Tobin, & C. McRobbie (Eds.), *Second international handbook of science education* (pp. 19-33). Dordrecht, The Netherlands: Springer.
- Milne, C. (2011). Marie Curie and ethics in research. In M.-H. Chiu, P. Gilmer, and D. Treagust (Eds.), *Celebrating the 100th Anniversary of Madam Maria Sklodowska Curie's Nobel Prize in Chemistry* (pp. 87-103). Dordrecht, The Netherlands: Sense Publishers.
- Plass, J. L., Homer, B. D., **Milne, C.**, Jordan, T., Kalyuga, S., Kim, M., & Lee, H. J. (2011). Design factors for effective science simulations: Representation of information. In R.E. Ferdig (Ed.), *Discoveries in gaming and computer-mediated simulations: New interdisciplinary applications* (pp. 16-35). Hershey, PA: IGI Global.
- Milne, C. (2010). Captives of the text? How analyzing discovery science stories set me free. In K. Scantlebury, J. B. Kahle, and S. Martin (Eds.), *Re-visioning science education from feminist perspectives: Challenges, choices and careers* (pp. 135-144). The Netherlands: Sense Publishers.
- Milne, C. (2008). In praise of questions: Elevating the role of questions for inquiry in secondary school science. In J. Luft, R. L. Bell, & J. Guess-Newsome (Eds.), *Science as inquiry in the secondary setting* (pp. 99-106). Washington, DC: National Science Teachers' Association.
- Milne, C. (2007). School science stories and a strategy of action for cultural transformation. In P. C. Taylor and J. Wallace (Eds.), *Contemporary qualitative research: Exemplars for science and mathematics educators* (pp. 69-79). Springer.
- Milne, C., & Ma, J. (2007). Making sense of the Regents Chemistry exam. In P. Fraser-Abder (Ed.), *Pedagogical issues in science, mathematics and technology education*. Volume 3. Schenectady, NY: New York Consortium for Professional Development.
- Milne, C. (2007). Power, status and the whole shebang: A personal perspective of collaborative research. In S. Ritchie (Ed.), *Research collaboration: Relations and praxis* (pp. 107-122). The Netherlands: Sense Publishers.

- Milne, C. (2006). Pitfalls in the teaching of evolution: Darwin, finches, history. In K. Tobin (Ed.), *Teaching and learning science: A Handbook* (pp. 401-409). Westport, CT: Praeger.
- Milne, C., & Tobin, B. (2006). Some issues for using comics in the science classroom: A conversation. In K. Tobin (Ed.), *Teaching and learning science: A Handbook* (pp. 313-316). Westport, CT: Praeger.
- Homan, S., & **Milne, C.** (2006). Hydrogen fuel cells: The alternative energy source of the future? In K. Tobin (Ed.), *Teaching and learning science: A Handbook* (pp. 541-546). Westport, CT: Praeger.
- Nam, J-M., & **Milne, C.** (2006). The truth about sunscreens and sunblocks: Using Sunprint paper to investigate SPF. In K. Tobin (Ed.), *Teaching and learning science: A Handbook* (pp. 537-540). Westport, CT: Praeger.
- Milne, C., McVarish, J. & Blonstein, J. (2006). Self-evaluation: Themes and tensions. In P. Fraser-Abder (Ed.), *Pedagogical issues in science, mathematics and technology education*. Volume 2. Schenectady, NY: New York Consortium for Professional Development.
- Blonstein, J., & **Milne, C.** (2006). "They're not doing anything." Coteaching prospective and in-service teachers: Modeling professional collaboration. In P. Fraser-Abder (Ed.), *Pedagogical issues in science, mathematics and technology education*. Volume 2. Schenectady, NY: New York Consortium for Professional Development.
- Otieno, T., & **Milne, C.** (2005). Paperclips + Polymers → Problems: Learning to use Levels of Representation in a High School Chemistry Classroom. In R. Elmesky, G. Seiler and K. Tobin (Eds.), *Improving urban science education: New roles for teachers, students, and researchers*. Boulder, CO: Rowan & Littlefield (Choice Book Award for Outstanding Academic Titles, 2006).
- Milne, C., & Blonstein, J. (2004). Beyond "Right On!" and "Awesome!" Examining the tensions between pedagogy and subject matter knowledge in a science methods course. In P. Fraser-Abder (Ed.), *Pedagogical issues in science, mathematics and technology education* (pp. 71-96). Schenectady, NY: New York Consortium for Professional Development.
- Beck, S. W. and **Milne, C.** (2004). The use of text for thinking and learning in science. In P. Fraser-Abder (Ed.), *Pedagogical issues in science, mathematics and technology education* (pp. 42-70). Schenectady, NY: New York Consortium for Professional Development.
- Milne, C. (2002). Dilemmas about representation: Textbooks and student reports. In J. Wallace and W. Louden (Eds.) *Dilemmas of science teaching: Perspectives on problems of practice* (pp. 116-118 and pp. 129-131). London: Routledge Falmer.
- Milne, C. (2000). Tertiary literacies: Integrating generic skills into the curriculum. In S. J. Fellows & C. Stevens (Eds.), *Integrating key skills in higher Education: Employability, transferable skills and learning for life* (pp. 87-97). London: Kogan Page.
- Carter, H., & **Milne, C.** (2000). Moving online: Developing a compulsory university-wide statistical literacy program. In M. Wallace, A. Ellis & D. Newton (Eds.) *Proceedings of Moving Online, A conference to explore the challenges for workplaces, colleges and universities* (pp.155-162), Gold Coast, Australia.
- Milne, C., & Taylor, P. C. (1998). Between a myth and a hard place: Situating school science in a climate of critical cultural reform. In W. Cobern (Ed.) *Culture, science and science education*. Dordrecht, The Netherlands: Kluwer Academic Press.

#### **Published Conference Proceedings – Peer Reviewed (selected)**

- Homer, B. D., Plass, J. L., **Milne, C.**, & Jordan, T. (2009). Icons and exploration: How interactions between learner characteristics and instructional design features affect learning in chemistry simulations. In Kong, S.C., Ogata, H., Arnseth, H.C., Chan, C. K. K., Hirashima, T., Klett, F., Lee, J. H. M., Liu, C. C., Looi, C. K., Milrad, M., Mitrovic, A., Nakabayashi, K., Wong, S. L., Yang, S. J. H. (eds.) (2009). *Proceedings of the 17th International Conference on Computers in Education [CDROM]*. Hong Kong: Asia-Pacific Society for Computers in Education.

Milne, C., & Peisley, E. (2000). Coming to terms with information literacies: Developing a university-wide introductory program. In *Proceedings of the lifelong learning conference*. Yeppoon, Australia: Central Queensland University.

Milne, C., Gluck, R., Peisley, E., Peel, T., & Myers, W. (1998). Information literacies on-line: Unanticipated benefits of assisting higher education students to meet basic information literacies skills. In R. M. Corderoy (Ed.), *Flexibility: The next wave?* Proceedings of the 15<sup>th</sup> Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education (pp. 507-516). Wollongong, NSW: University of Wollongong.

## GRANTS

**Co-Principal Investigator**, National Science Foundation: *Brain-to-brain synchrony in STEM learning*. Funded amount: \$1,485,824. Duration: April 2017- March 2020.

**Co-Principal Investigator**, National Science Foundation: *ITEST Strategies: Science of Smart Cities: A Curriculum and Training Program for Teachers and Students in Sustainable Applications of Urban Engineering and Technology*. Funded amount: \$1,198,400. Duration: June 2017 – May 2020.

**Co-Principal Investigator**, National Science Foundation: *DR K-12 Teaching STEM with Robotics: Design, Development, and Testing of a Research-based Professional Development Program for Teachers*. Funded amount: \$2,545,955. Duration: September 2014 – August 2018.

**Principal Investigator**, Camille & Henry Dreyfus Foundation: *Dynamic Molecules & Minds: Modeling the Kinetics of Chemical Reactions and Chemical Equilibrium*. Funded amount: \$50,000. Duration: January 1, 2014 – May 31, 2016.

**Principal Investigator**, US Dept. of Education. Institute of Education Sciences: *Molecules & Minds: Developing Bridging Scaffolds to Improve Chemistry Learning*. Funded Amount: \$1,456,706.00 Duration: August 1, 2009 – July 31, 2013. Grant Number: R305A090203.

**Co-Principal Investigator**, New York State Department of Education: *Clinically Rich Integrated Science Program (CRISP)*. Amount, \$2,100,000. Duration 36 months. Start date 08/11.

**Co-Principal Investigator**, US Dept. of Education. Institute of Education Sciences: *Mind and Molecules: Optimizing Simulations for Science Education* Funding amount: \$1,112,774.00 Duration: August 1, 2005-July 31, 2008 Grant Number: R305K05014.

**Co-Principal Investigator**, National Science Foundation. *The Scientific Thinker Project: A Study of Teaching and Learning Concepts of Evidence and Nature of Scientific Evidence in Elementary School*. Funded Amount: \$268,096. Duration: August 1, 2009 - July 31, 2010.

**Principal Investigator**, Steinhardt School of Culture, Education and Human Development, *IDEA Award: Using Eye-tracking to Assess High School Students' Visual Attention When Using Chemistry Simulations: A Pilot Study*. Requested amount, \$5000. Awarded May 2007.

**Principal Researcher**, *BRUCE and ROSA go to Coney Island - interactive robotic fish join the New York Aquarium* (PI Maurizio Porfiri). Funded amount: \$149,995. Awarded September 2012.

**Principal Researcher**, Games for Learning Institute. The Institute is funded by grants from organizations such as Microsoft. Started 2007. Collaborations involve New York University, NYU-Polytechnic, Columbia, Teachers College, The New School, Rhode Island School of Design, Dartmouth College.

**Principal Investigator**, Steinhardt School of Education, Research Challenge Grant *Qualitative evaluation of culminating papers submitted by graduating Master of Arts students*, 2003.

## OTHER SCHOLARLY ACTIVITIES

### Consultancies

Educational consultant, *NYU Abu Dhabi*, (2015-), *NYU-Poly GK-12 Fellows program* (2009- 2012).

Visiting Professor, *Science and Mathematics Education Center (SMEC)*, Curtin University, June-July 2011.  
Taught course, *The Invention of Science*, based on my book.

Visiting Professor, *Department of Chemistry*, University of Pennsylvania, 2003- 2006.

Consultant, Penn Science Teacher Institute, *Department of Chemistry*, University of Pennsylvania, 2008-2011.

### **Invited Presentations**

Symposium presenter, "Empiricism and the factual" for *Narrative Factuality: A Handbook*, FRIAS – Freiburg Institute of Advanced Studies, University of Freiburg, Germany. July 6-8, 2017.

Keynote Speaker, *Thinking about the Next Generation Science Standards*, X ENPEC 2015, Águas de Lindoia, Brazil, 27 November, 2015.

Keynote Speaker, *What evidence-based practice really means: Finding connections between research and practice in chemistry education*, Sharing our Success Conference, New York University, 29 April, 2011.

Keynote Speaker, *Making science relevant inside and outside the classroom*, Steinhart Policy Breakfast, New York University, New York, 11 March, 2011.

Presenter, Representation and interaction design for effective high school Chemistry simulations: Suggestions from the field, as part of the Symposium *Seeing Concepts: Rethinking Math and Science Instruction* at the 2010 Institute for Education Sciences (IES) Research Conference, National Harbor, MD, 28-30 June, 2010.

Presenter, *Emotions, learning, and a game design curriculum: Developing math games with middle school girls*. Urban Science Education Research – Network (USER-N), Graduate Center, City University of New York, February 16, 2013.

Presenter, *Exploring the design of effective Chemistry simulations*. Saturday Seminar Series, New York University, NY, September 9, 2009.

Presenter, *Why argument needs narrative in science education*. Urban Science Education Research – Network (USER-N), Graduate Center, City University of New York, December 5, 2008.

Discussant, *Agency and joint intentions in pedagogy: Who is responsible for children's learning?* By David Olsen as part of the Learning Cultures Conference, PS126, New York 3 February 2011.

### **Editor**

Co-editor-In-Chief, *Cultural Studies of Science Education*, 2011-

Co-editor book series, *Research Dialogues*, Sense Publishers, 2011-present

Co-editor book series, *Key Works*, Sense Publishers, 2011-present

Co-editor book series, *Cultural Studies of Science Education*, Springer, 2011-present

### **Editorial Board and Ad Hoc Reviewer**

Editorial Board Member, *Science Learning in Higher Education*

Editorial Board Member, *Research in Science Education*.

Editorial Board Member, *Journal of Research in Science Teaching*.

### **Strand Co-ordinator**

Strand Co-ordinator for Strand 1 – Understanding and Conceptual Change, *National Association for Research in Science Teaching*. 2007-2009.

### **Symposium/Forum Co-ordinator**



2016, Organizer Symposium, NARST 2016, *Why matter matters in Science Education: Implications for practice*. Baltimore, MD

2015, Organizer Invited Symposium, ESERA 2015, *Toward a meaningful science education: Cultural Studies of Science Education*. Helsinki, Finland.

2015, Organizer Symposium, AERA 2015, *Material practice and materiality: Too long ignored in Science Education research and practice?*

2014, Organizing Chair, CSSE Forum, *Finding the cultural in sociocultural*, Temple University, Philadelphia, PA.

2012, NSTA Symposium *Beyond the "Gee Whiz" factor: Evaluating and integrating simulations and games into the science (Chemistry) classroom*. Presented at NSTA Research Development Institute, Indianapolis.

2011, Organizing Chair, Springer Forum *Making the Most of Difference: Place, Positionality, and Power in Science Education*.

2008, 2002, Biennial Conference on Chemistry Education (BCCE) symposia, *Integrating simulations and animations into the teaching and learning of chemistry*, 2008; *Inquiry in chemistry education*, 2002.

## **TEACHING RESPONSIBILITIES**

### **Courses Taught:**

Pedagogy in a STEM context, GE, 2016-

Science in our Lives: Science, technology and decision making, UG Liberal Arts, 2016-

Science in Our Lives: Environmental Science, UG Liberal Arts, 2015-

Science in the Community, UG Liberal Arts, 2014-2015

Data and Assessment in Education, GE, 2012-

Science Curriculum and Teaching Methods, GE, 2011 –

Science in a Historical Perspective, GE, 2002 – 2011

Science Curriculum: Middle and High School, GE, 2005-

Recent Advances in Chemistry, GE, 2002 – 2008

Honors Seminar, UG Teaching & Learning, 2008-2009

The Teaching of Science: Curriculum, GE, 2003- 2007

The Teaching of Science: Methods, UG & GE, 2002 - 2006

Recent Advances in Physics, GE, 2003

The Teaching and Learning of Chemistry, GE, 2000-2002

Special Topics in Secondary Education: Science, GE, 2000-2002

Advanced Topics in the Teaching and Learning of Chemistry, GE, 2005

Environmental Chemistry, UG, 1997

Learning in Science and Mathematics, GE, 1995-1997

Special Topics in Science Education, GE, 1996

Gender Studies in Science and Mathematics Education, GE, 1996-1997

Developed new courses including *Breakthroughs in the Sciences*, *The Teaching of Science: Curriculum*, and *Science Curriculum and Teaching Methods*, *Science in our Lives: Getting Your Hands Dirty*, *Science in our Lives: Environmental Science*.

Developed hybrid online course, *Science methods: curriculum and teaching*

Within a residency program also teach minicourses in history and nature of science (Residency I – initial) and chemistry (Residency II – advanced), 2011- 2014.

Developed year-long pedagogy program for Engineering GK-12 Fellows (2009-2011)

### **Teacher Workshops and Invited Presentations for Teachers**

- Milne, C., & A. Brady.** (2016). *Molecules & Minds Workshop: Chemical Reactions and Chemical Equilibrium*, May 12, 2016, Create Lab, New York City, NY.
- Milne, C.** (2014). *A case of CCSS and learning in the disciplines (Chemistry): Challenging the 'wicked' problem of multimedia integration in curriculum development*. Workshop presented at the Technical Assistance Center on Disproportionality (TACD) Summer Institute, NYU, 27 June 2014.
- Milne, C. & Schwartz, R. N.** (2013). *Finding Science in the everyday: Balancing demonstration and contextualization in the chemistry classroom*. Workshop/ presentation at the annual meeting of the National Science Teachers Association, San Antonio, Texas, April 13, 2013.
- Milne, C.** (2013). *Common Core State Standards and contextualizing science: supporting students to explore science in the everyday*. 90-minute workshop modeled using articles, in this case one by Malcolm Gladwell from the New Yorker magazine, to develop a procedure for a diaper dissection and then modeled the inquiry possible building on this experience. Presented at the Sharing Our Success Meeting, May 4, 2012, UFT Center, New York City, NY.
- Milne, C.** (2012). *Beyond word walls and word searches: Understanding the crucial role of language functions in the disciplines, especially science*. A 90-minute workshop using squishy circuits to explore procedural and explanatory language functions. Presented at the Sharing Our Success Meeting, May 4, 2012, UFT Center, New York City, NY (published in the iBook, *STEME Education*).
- Milne, C.** (2012). Day-long workshop with eight teachers to design a curriculum document that can be used in chemistry classrooms and which incorporated Molecules and Minds Simulations of Diffusion, Kinetic Molecular Theory, Gas Laws and Phase Change, (see [create.nyu.edu/mm](http://create.nyu.edu/mm)), relevant elements of the new NRC Framework for K-12 science education and levels of Representation (Observable, Symbolic and Explanatory), July 8, 2012.
- Milne, C.** (2012, 2013). *Energy, heat, and temperature: Modeling matter*. Developed 15-hour summer science unit for Middle school students in consultation with teachers, implemented twice July 6-27, 2012.
- Milne, C.** (2011). 2-day workshop with 34 chemistry/biology teachers on integrating multimedia simulations into lesson plans for teaching kinetic molecular theory and associated topics, July 26-27, 2011, New York University, New York, NY.

## OTHER PROFESSIONAL RESPONSIBILITIES

### Doctoral Committee

Maaike Bouwmeester (2009-2011), Yoo-Kyung Chang (2009-2010), Kara Naidoo (2009-2013), *Teacher candidates' identity and efficacy development associated with science teaching and learning*; Sanaz Farhangi (2011- 2016), *Undergraduate students' potential contribution to physics: Using cultural-historical activity theory to re-conceptualize the way underrepresented populations in physical sciences are engaged as physics learners*; Tsu-Ting Huang (2012- 2016), *The effects of types of reflective scaffolding and language proficiency on the acquisition of physics knowledge in a game-based learning environment*; Anna Brady (2013-), Mubina Khan (2013-2016), *Questioning and metacognitive thinking: On-line and off-line assessments in understanding the role of prompting/questioning and metacognitive thinking in a digital chemistry learning environment*; William (Max) Meyer (2013-), *Problematizing the invasion of ideas: Exploring the establishment of systems thinking in teachers & schools using a systems ecology framework*; Steve Yavner (2013-2016), *The impact of fatigue and stress on medical students' selection of multimedia learning materials*; Christina Gundlach (2014-), *Remedial students' achievement in the Community Colleges*; Dixie Ching (2014- 2016), *"What do you need to do that?" Understanding how adolescents in afterschool settings recruit and leverage social learning ecologies for long-term interest-driven learning*; Yalonta Kornak (2012-2016), *Effects of a computer-based simulation on chemical self-efficacy*; Paul Phamduy (2015-2016), *Robotic fish to aid animal behavior studies and informal science learning*; Heather Burns Page (2016-), *Using scientific practice to address the girls' crisis: designing science education from a feminist perspective*.

Co-supervisor: Doctoral student at Curtin University of Technology, Perth, 2002-2004.

External Examiner: Curtin University, Perth, Queensland University of Technology, University of Tasmania.

## COMMITTEES

### School

Chair Search Committee Environmental Conservation Education	2012-2013
Search Committee Secondary Special Education	2013-2014
Search Committee Literacy and English Education	2011-2012
Search Committee Administration Leadership and Technology	2004-2005 and 2007-2008
Search Committee Mathematics Education	2004-2005
Search Committee Science Education	2005-2006
Steinhardt Representative (alternate) on NYU University Committee on Activities Involving Human Subjects	2014-
Steinhardt Distinguished Teaching Awards Committee	2012-
Steinhardt Technology Committee	2007- 2010
Steinhardt Curriculum and Course Program Committee	2010-2013
Mitchell Leaska Award Review Committee	2008, 2014
IDEA Award Panel	2008
Steinhardt Technology Challenge Panel	2009
Technology Challenge Grants	2010

### Department

Chair, Department of Teaching & Learning .....	2016-
Director of Undergraduate Studies .....	2015-2016
Chair, Student Academic Life Committee .....	2015-2016
Chair, Curriculum Committee	2002-2007, 2010-2013
Student Academic Life Committee	2014-
edTeacherPerformanceAssessment (edTPA) Committee	2012-2013
Faculty Development Committee	2005-2007
Space Committee	2011