

**DEPARTMENT OF CURRICULAR AND INSTRUCTIONAL STUDIES
THE UNIVERSITY OF AKRON
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Education

- Ph.D. 2011 Illinois Institute of Technology, Chicago, IL, Science Education

Dissertation: The Impact of Professional Development in Informal Science Contexts on Teachers' Content Knowledge and Discourse.
Advisors: Judith S. Lederman and Norman G. Lederman
- M.Ed. 2006 Lesley University, Cambridge, MA, Science Education
- M.A. 1992 Lesley University, Cambridge, MA, Art Therapy
- B.A. 1990 Boston College, Chestnut Hill, MA, Psychology,
Minor – Fine Arts

Work Experiences

- 2017-Present **Associate Professor, Science Education**, Department of Curricular and Instructional Studies, The University of Akron, OH.
- 2016 **Interim Program Assessment and Support Facilitator (PASF)**
High Institute of Elastomer Industries, Saudi Arabia, College of Polymer Science and Polymer Engineering, The University of Akron, OH.
Facilitated assessment of a technical training program and elastomer technology instructors at an overseas training institute.
- 2014-2016 **Instructor and Elastomer Technology Instructor (ETI) Supervisor**
High Institute of Elastomer Industries, Saudi Arabia, College of Polymer Science and Polymer Engineering, The University of Akron, OH.
- 2011-2017 **Assistant Professor, Science Education**, Department of Curricular and Instructional Studies, The University of Akron, OH.

Courses Taught:

Nature, History and Philosophy of Science
Educational Technology
Teaching Science to Middle Level Learners

Instructional Technology Applications
Teaching and Learning in STEM
Teacher Candidate Supervision

2006-2011 **Research Assistant**, Department of Mathematics and Science Education,
Illinois Institute of Technology, Chicago, IL.

Project Involvement:

High School Transformation Project, Assessment Co-Lead, 2006-2011

A five-year grant funded by the Melinda and Bill Gates Foundation designed to provide professional development, instructional support and curriculum materials for Chicago Public School teachers of Biology, Chemistry, and Physics.

Primary responsibilities included:

- developing formative and summative assessment items for student tests.
- working with Chicago Public School and American Institutes for Research staff to format individual items and assessments for all three content areas.
- working closely with HSTP project manager and coaches when developing and approving items and assessment forms.
- attending item review, data review, and standard setting meetings.
- assisting in the collection of data (e.g., pre/post questionnaires), data analysis, and presentation at professional meetings.
- assisting with and leading professional development workshops regarding assessment.

Student Teacher Supervision, 2010-2011

Supervision of student teachers in biology classrooms, including weekly meetings with and observation of the student teacher.

Taiwan Teacher Professional Development, 2010

A one-week PD at the Illinois Institute of Technology for secondary gifted/talented math and science teachers from Taiwan. Addressing effective teaching strategies, research design, clinical supervision, informal education, and assessment.

Illinois Math and Science Academy Aurora, IL 2008-2011

Responsible for ongoing assessment and assisting with scoring of instruments to measure the school's gifted sophomores and seniors understanding of nature of science and scientific inquiry.

IIT/Essex Large Scale Assessment Project, 2007-2010

Responsible for working with a research group at the University Duisburg-Essen, Germany, and assisting with:

- development of an instrument with a historical context to assess students (15-16 yrs of age) and competencies regarding nature of science and scientific inquiry
- evaluating assessment items for readability for students in the United States
- administering instruments in the United States
- reviewing and editing proposals for national and international meetings.

Illinois State Board of Education (ISBE) Pre-service Program Accreditation, 2008-2010

Assisted with preparing for site visit (October 2010) and editing/formatting of various reports for submission to ISBE.

Sir Miles Davis Magnet Academy Professional Development, Chicago, IL, 2008-2010

Assisted with preparing for and conducting a series of workshops for elementary and middle school staff. Primary focus was on developing Science, Technology, Engineering, and Mathematics (STEM) curriculum for all grade levels.

Taiwanese Middle School Gifted Science Camp 2006-2009, 2011

An annual two-week science camp at the Illinois Institute of Technology focusing on nature of science, scientific inquiry and technology. Responsible for teaching life science classes covering anatomy, taxonomy, natural selection, and ecology.

Project Way 2 Go funded by NSF 2006-2008

A research project comparing inquiry-based instruction to direct instruction.

Assisted instructors (e.g., fidelity to the teaching method)

Reviewed lesson plans

Project manager (2007-2008)

An International, Systematic Investigation of the Relative Effects of Inquiry and Direct Instruction, 2007

Assisted with scoring and data analysis for a joint project with IIT, Chicago, and Stockholm University, Sweden.

Korean Teacher Professional Development, 2006

A summer two-week PD at the Illinois Institute of Technology for secondary Korean teachers.

- Assisted in teaching classes on the use of technology in the classroom (probeware, computers, calculators, etc.)
- Assisted in teaching classes on explicit and reflective instruction of the nature of science

Courses Taught:

Instructional Methods for Pre-Service Teachers
Informal Education Practicum and Seminar
Inquiry and Nature of Science

Guest Speaker in Courses:

Qualitative Research Methods (Fall '09)
Responsible for teaching doctoral students about using digital and printed resources for conducting research.

Middle & Secondary Level/ Curriculum/Foundations (April '09)
Responsible for teaching graduate students about diversity.

Action Research (September '07)
Responsible for teaching graduate students about using SPSS and providing a statistics tutorial

Action Research (Summer '10)
Responsible for teaching masters students about using digital and printed resources for conducting research.

Mentoring:

Statistics and SPSS mentor for students in Action Research (2007-2010)

2009-2010 **Science Teacher**, Perspectives / IIT Math and Science Academy, Chicago, IL
Responsibilities included teaching and developing curriculum for a ninth grade integrated biology class with a focus on biotechnology and ecotechnology.

2000-2006 **Coordinator of Outreach Services**, Education Department,
New York Aquarium, Wildlife Conservation Society, Brooklyn, NY
Primary responsibilities included:

- developing pre-K - 16 marine science lessons
- coordinating programs for outreach staff members
- supervising outreach staff members.

Science Teacher, New York Aquarium School Partners

Responsibilities included year-long science teaching at the following schools:

- PS 81 Robert J. Christen School (K-6)
- PS 206 Horace Harding School (K-6)
- PS 208 Elsa Ebeling School (K-6)
- PS 238 Anne Sullivan School (K-6)
- PS 288 Shirley Tanyhill School (K-6)
- PS 329 Surfside School (K-6)
- St. Josephs Hill Academy (K-6)

Special Education Science Teacher, New York Aquarium School Partners
Responsibilities included year-long science teaching for special needs classes at the following schools:

- PS 30 R. Hernandez / L. Hughes School
- PS 48 William C. Wilcox School
- PS 117 J Keld Briarwood School
- PS 138 M
- PS 370 K Jim Thorpe School
- PS 721 K Brooklyn Occupational Training Center

Professional Development, Education Department, New York Aquarium, Wildlife Conservation Society, Brooklyn, NY.

- 2000-2006 *Docent Training*. Workshops presented for the New York Aquarium Education Department, Brooklyn, NY.
- 2004-2006 *Marine Invertebrates and Vertebrates*. Workshops presented for the special education faculty at PS 721 K, Brooklyn Occupational Training Center, Brooklyn, NY.
- 2005 *Scientific Methods/ Inquiry/ Research*. A two-day workshop presented for faculty at PS 176, Ovington School, Brooklyn, NY.
- 2003-2005 *Working with Special Needs Populations*. A series of workshop presented for instructors in the Wildlife Conservation Society Education Department, Bronx, NY.
- 2004 *Marine Invertebrates and Vertebrates*. A workshop for special education faculty at PS 23Q, Queens Children Center, Queens, NY.
- 2003 *Marine Invertebrates and Vertebrates*. A workshop presented to faculty at the Rikers Island Correctional Facility High School, Queens, NY.
- 2003 *Marine Invertebrates, Fish and Sharks, Whales*. A workshop presented to 3-5 grade faculty at PS 215, Morris H. Weiss School, Brooklyn, NY.
- 2001-2002 *Marine Invertebrates and Vertebrates*. Workshops presented for the special education faculty at PS 138 M, NY, NY.

- 1995-2000 **Museum Educator**, Education Department, Museum of Natural History & Planetarium, Roger Williams Park, Providence RI,
Responsibilities included:
- teaching K-12 curriculum based science programs
 - developing K-12 curriculum
 - assisting with professional development for K -12 teachers
- 1994-1995 **Program Assistant**, Families Together, Providence Children's Museum, Providence, RI
Responsibilities included coordinating, supervising and guiding high-risk, separated families (clients of the Department of Children, Youths and Families (DCYF) and Family Court) for weekly visitations in the museum exhibit areas.

Related Work Experiences

- 2005 **Instructor**, Brooklyn College, Brooklyn, NY.
Selected environmental concepts in the biological sciences for elementary and middle school in-service teachers.
- 2002-2005 **Instructor**, American Museum of Natural History, New York, NY.
Responsibilities included producing and conducting marine science programs at the museum for children and parents.
- 1992-2000 **Education Consultant for the Neonatal Intensive Care Unit**, Women and Infants' Hospital, Providence, RI.
Responsibilities include running the Kids' Klub Visitation Program, a weekly group for siblings, ages 3 - 12, of high risk and/or premature infants planning and conducting appropriate weekly activities to further understanding of the babies and the hospital environment, working in conjunction with hospital social workers, psychologists, nursing staff and volunteers.
- 1992-1993 **Counselor**, Communities for People, Providence, RI,
Responsibilities included supervising and monitoring high-risk adolescent boys in a group home setting.
- 1991-1992 **Counseling Intern**, Bay Cove Mental Health Clinic, Lemuel Shattuck State Hospital, Jamaica Plain, MA,
Responsibilities included running individual and group therapy sessions on four wards (a day treatment center, an admissions ward, a long-term ward and a short-term ward) with adolescents and adults in a psychiatric setting.
- 1990-1991 **Counseling Intern**, Cotting School, Lexington, MA,
Responsibilities included running individual and group therapy sessions in a K-12 school setting for students with multiple physical and/or learning disabilities.

Consulting

- 2014-2015 **Instructor and Supervisor**, Supervision of program instructors, effective teaching and lesson plan seminars for instructors of the High Institute for Elastomer Industries, Yanbu, Saudi Arabia.
- 2013-2015 **Co-Instructor**, Taiwan Academic Cultural Exchange for students of the Mingdao High School in Taipei, Taiwan at the Illinois Institute of Technology, Chicago IL (Summer).
- 2013-2015 **Co-Instructor**, Institute for the Advancement of Inquiry Based Science Teaching at the Illinois Institute of Technology, Chicago IL (Summer). Sponsored by INTEL Education Initiative, China.
- 2010 **Science Editorial Reviewer**, *National Geographic Science: Teachers Editions, Science Inquiry and Writing Books (3-5th Grade Life Science, Earth Science, and Physical Science)*, by Randy Bell, Judith Lederman, Malcolm Butler, Kathy Cabe Trundle, and David Moore. National Geographic School Publishing, Hampton-Brown: Washington DC.
- 2006-2011 **Science Trainer**, Zula International, Burbank, CA.
Responsible for conducting workshops for pre-K through 2nd grade teachers about using public television programming and associated materials to enhance science, mathematics, and reading literacy in the curriculum.
- WTTW PBS Television Studio, Chicago, IL (November, 2006)
 - Adler Planetarium, Chicago, IL (December, 2006)
 - WTTW PBS Television Studio, Chicago, IL (October, 2007)
 - Adler Planetarium, Chicago, IL (April 24 & 25, 2009)
 - Headstart, New Orleans, LA (November, 2009)
 - Headstart, Washington, DC (January 14 & 15, 2010)
 - Department of Education, Queens, NY (June 10, 2010)
 - Summer Institute: Focus on Inquiry, Washington, DC (June 24 & 25, 2010)
 - Headstart, Alexandria, VA (August 31, 2010)
 - NYC Education Department, Manhattan, NY (March 30, 2011)
- 2004 **Illustrator and Designer**, Wildlife Conservation Society, Bronx, NY.
Large format storyboards for PreK-3 education programs:
- Elly Jelly looks at marine animals: The birthday feast
 - Elly Jelly looks at marine animals: The right move
 - Elly Jelly looks at marine animals: Elly Jelly's surprise
 - Happy Hermit.
 - Can you do it?

- 2003 **Science Editorial Reviewer**, Wildlife Conservation Society, Bronx, NY.
K-3 marine science curriculum (readers, teacher guides, and workbooks):
- Elly Jelly looks at marine animals: Elly Jelly's surprise.
 - Elly Jelly looks at marine animals: Big Wilma.
 - Elly Jelly looks at marine animals: The right move.
 - Elly Jelly looks at marine animals: The color changer.
 - Elly Jelly looks at marine animals: The best defense.
 - Elly Jelly looks at marine animals: The birthday feast.
- 2002 **Science Editorial Reviewer**, Penguin Putnam Publishers, NY, NY.
All Aboard Science Reader: Whales (Grades 1 - 3), by Graham Faiella.

Museum Exhibit Productions

- 1998 Designed, produced exhibit features, and installed *Joint Ventures*, an exhibition produced for the Museum of Natural History, Providence, RI
- 2000 Designed and installed *Circle of the Sea*, an exhibition for the Museum of Natural History, Providence, RI.

Research and Scholarship

Publications

Books

Keough, T., Sweeney, J.K., & Holliday, G.M. (2002). *Circle of the sea: Creations from Oceania*. Museum of Natural History, Roger Williams Park. Providence, RI.

Invited Chapters

Lederman, J.S., Holliday, G.M., & Lederman, N.G. (2012). The impact of exhibit-based professional development on teacher's pedagogical content knowledge. In *Understanding interactions at science centers and museums: Sociocultural perspectives*. (pp. 97-114). The Netherlands: Sense Publishers.

Peer Reviewed Chapters

Lederman, J.S., & Holliday, G.M. (2017). Addressing nature of scientific knowledge in the preparation of informal educators. In P.G. Patrick (Ed.), *Preparing informal science educators* (pp. 509-525). New York, NY: Springer.

Makki, N., & Holliday, G.M. (2016). Going beyond the status quo: A longitudinal self-study of a school based science teacher preparation program. In G.A. Buck & V.L. Akerson (Eds.), *Allowing our professional knowledge of pre-service science teacher education to be enhanced by self-study research: Turning a critical eye on our practice* (pp. 271-288). New York, NY: Springer.

Peer Reviewed Journals

- Holliday, G.M., & Lederman, N.G. (2014). Informal science educators' views about nature of scientific knowledge. *International Journal of Science Education, Part B: Communication and Public Engagement*, 4 (2), 123-146.
- Holliday, G.M., Lederman, N.G., & Lederman, J.S. (2014). Comfort and content: Considerations for informal science professional development. *International Journal of Science Education, Part B: Communication and Public Engagement*, 4 (4), 356-375.
- Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2014). "Wow! Look at that!": Discourse as a means to improve teachers' science content learning in informal science institutions. *Journal of Science Teacher Education*. DOI: 10.1007/s10972-014-9409-9

Peer Reviewed Proceedings

- Zilker, I., Holliday, G.M., Fischer, H.E., Kauertz, A., Lederman, J.S., & Lederman, N.G. (2010). Are historical contexts suitable for assessing students' competences in the field of nature of science and scientific inquiry? In M.F. Taşar & G. Çakmakçı (Eds.), *Contemporary science education research: International perspectives* (pp. 237-244). Ankara, Turkey: Pegem Akademi.
- Zilker, I., Holliday, G.M., Fischer, H.E., Kauertz, A., Lederman, J.S., & Lederman, N.G. (2011, April). Assessing understanding about nature of science in historical contexts. *Proceedings of the National Association for Research in Science Teaching: Orlando, FL*. Print.
- Lederman, J.S., Lederman, N.G., & Holliday, G.M. (2011, January). Project SLICE: Science learning through inquiry, content, and engagement. *Proceedings of the Southern African Association for Research in Mathematics, Science and Technology Education* (pp. 63-66). North-West University: Mafikeng.
- Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2013). Teacher satisfaction and science content learning during professional development at an informal science institution. *Proceedings of the Southern African Association for Research in Mathematics, Science and Technology Education* (pp. 211-214). University of the Western Cape: Cape Town.
- Holliday, G.M., Lederman, N.G., & Lederman, J.S. (2013). The Impact of Professional Development in Informal Science Contexts on Teachers' Discourse. *Proceedings of the American Educational Research Association: San Francisco, CA*. Online.
- Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2014). Addressing Inquiry During Professional Development at an Informal Science Institution. *Proceedings of the Southern African Association for Research in Mathematics, Science and Technology Education* (pp. 43-49). Nelson Mandela Metropolitan University: Port Elizabeth.
- Liang, X., Pachnowski, L., Plaster, K., & Holliday, G.M. (2014). An Analysis of Career Changers' Need in a Clinical Immersed STEM Teacher Preparation Program. *Proceedings of the American Educational Research Association: Philadelphia, PA*. Online.

Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2016). Addressing inquiry during professional development at an informal science institution. *Proceedings of the European Science Education Research Association: Helsinki, Finland*.

Grants

Principal Investigator (with Lynne Pachnowski and Karen Plaster). The benefits and barriers of audio recording technology when used during teacher candidate supervisory experiences, College of Education, The University of Akron, \$1,935 (2012).

Co-Principal Investigator (with Lynne Pachnowski, Nidaa Makki, and Karen Plaster). Ohio STEM Learning Network (OSLN) – UA Woodrow Wilson Teaching Fellowship, Ohio Department of Education, \$90,000 (2012).

Co-Principal Investigator (with Lynne Pachnowski, Nidaa Makki, and Karen Plaster). The University of Akron/Akron OSLN Hub Woodrow Wilson Initiative, Ohio STEM Learning Network, \$25,000 (2013).

Co-Principal Investigator (with Lynne Pachnowski, Nidaa Makki, and Karen Plaster). Ohio STEM Learning Network (OSLN) – UA Woodrow Wilson Teaching Fellowship, \$5,000 (2014).

Co-Principal Investigator (with Lynne Pachnowski, Nidaa Makki, and Karen Plaster). The University of Akron/Akron OSLN Hub Woodrow Wilson Initiative, Ohio STEM Learning Network, \$10,500 (2014).

Principal Investigator (with Lynne Pachnowski, Forrest Sheng Bao, Seungdeog Choi and Karen Plaster). *Advancing Boys & Girls Clubs in STEM (BGC_STEM) through Afterschool Robotics*. National Science Foundation (14-555), \$1,769,296 [not funded].

Co-Principal Investigator (with Phil Hoffman and William Cole). STEM Art App, The Toyota Foundation, \$50,000 [not funded].

Key Project Staff (with Theresa Beyerle, Tracey Riley, Judi Juvancic-Heltzel, and Michelle Boltz), *i-GEODE (Interprofessional gardening/exercise obesity diminishing endeavor)*. Robert Wood Johnson Foundation Healthy Eating Research program, \$170,000 [not funded].

Principal Investigator (with Edward Evans, Nidaa Makki, Karen Plaster, and Lynne Pachnowski). *Reclaiming engineering and technology in STEM*. National Science Foundation (12-525), \$1,199,966 [not funded].

STEAMed Up About Art APP (with Ellen Perduyn, William Cole, and Phil Hoffman). Progressive Insurance and the Knight Foundation for \$120,000 [not funded].

Principal Investigator (with Lynne Pachnowski, Forrest Sheng Bao, Seungdeog Choi and Karen Plaster). *Advancing Boys & Girls Clubs in STEM (BGC_STEM) through Afterschool Robotics*. National Science Foundation (15-593), \$ 2,064,848 [not funded].

Co-Principal Investigator (with Paula Watt). *Polymer Frontiers: Making the Connection from Research to Careers for STEM Informal Educators and Learners (PF-R2C)*. National Science Foundation (15-593), \$299,907 [not funded].

Presentations at Professional Meetings

International

Lederman, J., Holliday, G., Lederman, N., & Babcock, E. (2007, August). *Changes in biology teachers' attitudes and behavior toward informal learning sites: An urban case study*. Paper presented at the international conference of the European Science Education Research Association: Malmo, Sweden.

Zilker, I., Holliday, G.M., Kauertz, A., Fischer, H.E., Lederman, J.S., & Lederman, N.G. (2009, August). *Are historical contexts suitable for assessing students' competences in the field of nature of science and scientific inquiry?* Paper presented at the international conference of the European Science Education Research Association: Istanbul, Turkey.

Holliday, G.M. (2010, April). *Working with gifted and talented students in an integrated biology classroom*. Invited paper presented at the International Conference on Mathematics and Science Gifted Education and Teacher Education: Changhua, Taiwan.

Lederman, J.S., Lederman, N.G., Holliday, G.M. (2011, January). *Project SLICE: Science learning through inquiry, content, and engagement*. Paper presented at the international conference of the Southern African Association for Research in Mathematics, Science, and Technology Education: Mmabatho, South Africa.

Lederman, J.S., Lederman, N.G., Meyer, D.Z, Antink-Meyer, A, Bartos, S.A., & Holliday, G.M. (2011, July). *The fragile nature of teachers' views of nature of science (NOS)*. Paper presented at the 11th International IHPST and 6th Greek History, Philosophy and Science Teaching Joint Conference: Thessaloniki, Greece.

Lederman, J.S., Lederman, N.G., & Holliday, G.M. (2011, September). *Project SLICE: Science learning through inquiry, content, and engagement*. Paper presented at the international conference of the European Science Education Research Association: Lyon, France.

Lederman, J.S., Lederman, N.G., Meyer, D.Z, Antink-Meyer, A, Bartos, S.A., & Holliday, G.M. (2011, September). *The fragile nature of teachers' views of nature of science (NOS)*. Paper presented at the international conference of the European Science Education Research Association: Lyon, France.

Lederman, J.S., Lederman, N.G., & Holliday, G.M. (2012, January). *A systematic professional development project to build teaching capacity for more effective STEM learning*. Paper presented at the international conference of the Southern African Association for Research in Mathematics, Science, and Technology Education: Malawi, South Africa.

Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2012, January). *The impact of professional development in informal science contexts on teachers' discourse*. Paper presented at the international conference of the Southern African Association for Research in Mathematics, Science, and Technology Education: Malawi, South Africa.

Lederman, J.S., Lederman, N.G., Holliday, G.M., Bartos, S., Bartels, S., & Gnanakkan, D. (2012, August 15 & 16). *New technologies for classroom instruction, teacher education, research, and supervision*. Invited workshop presented at the National Changhua University of Education: Changhua, Taiwan.

Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2013, January). *Teacher satisfaction and science content learning during professional development at an informal science institution*. Paper presented at the international conference of the Southern African Association for Research in Mathematics, Science, and Technology Education: Cape Town, South Africa.

Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2014, January). *Addressing inquiry during professional development at an informal science institution*. Paper presented at the international conference of the Southern African Association for Research in Mathematics, Science, and Technology Education: Port Elizabeth, South Africa.

Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2015, September). *Addressing inquiry during professional development at an informal science institution*. Poster presented at the international conference of the European Science Education Research Association: Helsinki, Finland.

Lederman, N.G., Lederman, J.S., Holliday, G.M., & Bartels, S. (2016, June). *The nature and teaching of scientific inquiry*. Workshop presented at the 2016 conference of the Open University of Kaohsiung: Kaohsiung, Taiwan.

Lederman, J.S., Lederman, N.G., Bartels, S., & Holliday, G.M. (2016, June). *Elements of effective professional development*. Workshop presented at the 2016 conference of the Open University of Kaohsiung: Kaohsiung, Taiwan.

National

Meyer, E.C., Kennally, K., Zika-Beres, E., & Holliday, G. (1995) *Kids' Klub: Support, education, and visitation for siblings of high-risk infants*. Paper presented at the National Conference of the Association for the Care of Children's Health: Boston, MA.

- Babcock, E., Willie, S., Holliday, G., & Alvelo-Santiago, M. (2007, May). *Museum and university partnerships: Transforming urban public high schools in Chicago*. Paper presented at the annual meeting of the American Association of Museums: Chicago, IL.
- Tompkins, A., Lederman, J., Roelle, B., Schmidt, C., Minerva, C., & Holliday, G. (2007, November). *The zula patrol - ready, set, science workshop: A model for implementing science and astronomy in pre-K to second-grade classrooms*. Session presented at the annual meeting of the National Association for the Education of Young Children: Chicago, IL.
- Meyer, D., Avery, L.M., Antink, A., Connell, M.G., & Holliday, G.M. (2008, March). *Using Excel as a qualitative data analysis tool*. Session presented at the annual meeting of the American Educational Research Association: New York, NY.
- Holliday, G.M., Lederman, N.G., & Lederman, J.S. (2008, March). *Assessing learning with personal meaning mapping at a natural history museum*. Paper presented at the annual meeting of the American Educational Research Association: New York, NY.
- Lederman, J.S., & Holliday, G.M. (2008, March). *Nature of science and scientific inquiry in informal science settings*. Session presented at the annual meeting of the National Science Teachers Association: Boston, MA.
- Lederman, J.S., Lederman, N.G., & Holliday, G.M. (2008, March). *Teaching the nature of science to young children (CESI)*. Session presented at the annual meeting of the National Science Teachers Association: Boston, MA.
- Holliday, G.M., Lederman, N.G., & Lederman, J.S. (2008, March). *Assessing learning that occurs at informal science settings*. Paper presented at the annual meeting of the National Science Teachers Association: Boston, MA.
- Tompkins, A., Holliday, G.M., & Lederman, J.S. (2008, March). *Science in the early education classroom: Formal and informal perspectives*. Session presented at the annual meeting of the National Science Teachers Association: Boston, MA.
- Holliday, G.M., Lederman, N.G., & Lederman, J.S. (2008, April). *Using personal meaning mapping to assess learning at a natural history museum*. Paper presented at the annual international meeting of the National Association for Research in Science Teaching: Baltimore, MD.
- Zilker, I., Holliday, G.M., Kauertz, A., Fischer, H.E., Lederman, J.S., & Lederman, N.G. (2008, April). *Developing a large scale assessment instrument measuring students' competencies in nature of science and scientific inquiry*. Paper presented at the annual international meeting of the National Association for Research in Science Teaching: Baltimore, MD.

- Lederman, G.M., Lederman, J.S., Holliday, G.M., & White, K.J. (2009, April). *Project SLICE: Science learning through inquiry, content, and engagement*. Paper presented at the annual international meeting of the National Association for Research in Science Teaching: Garden Grove, CA.
- Holliday, G.M., Lederman, N.G., & Nieswandt, M. (2009, April). *Understanding museum educators' views about nature of science*. Paper presented at the annual international meeting of the National Association for Research in Science Teaching: Garden Grove, CA.
- Holliday, G.M., Lederman, N.G., & Nieswandt, M. (2009, April). *Museum educators' views about nature of science*. Poster presented at the annual meeting of the American Educational Research Association: San Diego, CA.
- Zilker, I., Holliday, G.M., Kauertz, A., Fischer, H.E., Lederman, J.S., & Lederman, N.G. (2010, March). *A competence test in the field of nature of science and nature of scientific inquiry*. Paper presented at the annual international meeting of the National Association for Research in Science Teaching: Philadelphia, PA.
- Holliday, G.M., & Lederman, N.G. (2010, March). *A comparison of views about nature of science among informal science educators and exhibit designers*. Paper presented at the annual international meeting of the National Association for Research in Science Teaching: Philadelphia, PA.
- Holliday, G.M., & Lederman, J.S. (2010, March). *Teaching nature of science beyond the classroom*. Workshop presented at the annual national meeting of the National Science Teacher Association: Philadelphia, PA.
- White, K.J., Holliday, G.M., & Bartos, S. (2010, March). *Limits on cell size: Tweaking labs to teach about nature of science and scientific inquiry*. Workshop presented at the annual national meeting of the National Science Teacher Association: Philadelphia, PA.
- Holliday, G.M., Kinser, B.P., Maxwell, K., & Pappas, J. (2011, March). *Synergy: Bringing biology, ecology, and technology together*. Workshop presented at the annual national meeting of the National Science Teacher Association: San Francisco, CA.
- Antink, A.L., Holliday, G.M. (2011, March). *Incorporating problem based learning and creativity in integrated science classrooms: An international perspective*. Workshop presented at the annual national meeting of the National Science Teacher Association: San Francisco, CA.
- Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2011, April). *Content related social interactions during professional development at an informal science institution*. Paper presented at the annual international meeting of the National Association for Research in Science Teaching: Orlando, FL.

- Zilker, I., Holliday, G.M., Kauertz, A., Fischer, H.E., Lederman, J.S., & Lederman, N.G. (2011, April). *Assessing understanding about nature of science in historical contexts*. Paper presented for the annual international meeting of the National Association for Research in Science Teaching: Orlando, FL.
- Lederman, J.S., Holliday, G.M., Meyer, A.A., Meyer, D.Z., Bartos, S.A., & Lederman, N. (2012, January). *A new generation of teacher education roles: Incorporating iPad and livescribe technologies to facilitate preservice and inservice teacher growth*. Workshop presented at the annual international meeting of the Association for Science Teacher Education: Clearwater, FL.
- Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2012, January). *The impact of professional development in informal science contexts on teachers' content learning and discourse*. Paper presented at the annual international meeting of the Association for Science Teacher Education: Clearwater, FL.
- Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2012, March). *"Wow! Look at that!": The impact of professional development in informal science contexts on teachers' discourse*. Paper presented at the annual international meeting of the National Association for Research in Science Teaching: Indianapolis, IN.
- Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2012, April). *ASTC Session: Professional development at informal science settings: Recommendations for educators*. Workshop presented at the annual national meeting of the National Science Teachers Association: Indianapolis, IN.
- Holliday, G.M., & Lederman, J.S. (2012, April). *Expanding young children's experiences with inquiry*. Workshop presented at the annual national meeting of the National Science Teachers Association: Indianapolis, IN.
- Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2013, March). *Teacher satisfaction and science content learning during professional development at an informal science institution*. Paper presented at the annual international meeting of the National Association for Research in Science Teaching: Rio Grande, PR.
- Davidsson, E., Jakobsson, A., Lederman, J., & Holliday, G. (2013, March). *Understanding interactions at science centers and Museums: Approaching sociocultural perspectives*. Symposium presented at the annual international meeting of the National Association for Research in Science Teaching: Rio Grande, PR.
- Holliday, G.M., Makki, N., Plaster, K., Ostrowski, C., & Rouse, S. (2013, April). *Woodrow Wilson Fellows: Shaping teaching practice through field-based action research*. Presentation presented at the annual national meeting of the National Science Teachers Association: San Antonio, TX.

- Rouse, S., Holliday, G.M., & Plaster, K. (2013, April). *Biotechnology: Making biodiesel in the chemistry classroom*. Workshop presented at the annual national meeting of the National Science Teachers Association: San Antonio, TX.
- Holliday, G.M., Lederman, N.G., & Lederman, J.S. (2013, April). *The impact of professional development in informal science contexts on teachers' discourse*. Paper presented at the annual international meeting of the American Educational Research Association: San Francisco, CA.
- Holliday, G.M., Lederman, N.G., & Lederman, J.S. (2014, January). *Teacher satisfaction and science content learning during professional development at an informal science institution*. Paper presented at the annual international meeting of the Association for Science Teacher Education: San Antonio, TX.
- Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2014, April). *Teacher satisfaction and science content learning during professional development at an informal science institution*. Paper presented at the annual international meeting of the American Educational Research Association: Philadelphia, PA.
- Liang, X., Pachnowski, L., Plaster, K., & Holliday, G.M. (2104, April). *An analysis of career changers' need in a clinical immersed STEM teacher preparation program*. Paper presented at the annual international meeting of the American Educational Research Association: Philadelphia, PA.
- Holliday, G.M., Makki, N., & Plaster, K. (2014, April). *Woodrow Wilson fellows: Shaping teaching practice through field-based action research*. Paper presented at the annual national meeting of the National Science Teachers Association: Boston, MA.
- Holliday, G.M., Lederman, J.S., & Lederman, N.G. (2014, January). *Understanding how inquiry is addressed during professional development at an informal science institution*. Paper presented at the international conference of the National Association for Research in Science Teaching: Pittsburgh, PA.
- Holliday, G.M., & Makki, N. (2104, July). *How to incorporate nature of science into the middle and secondary Classroom*. Workshop presented at the national convening of the Woodrow Wilson Teaching Fellows: Chicago, IL.
- Holliday, G.M., Lederman, N.G., & Lederman, J.S. (2015, January). *Addressing inquiry during professional development at an informal science institution*. Paper presented at the annual international meeting of the Association for Science Teacher Education: Portland, OR.
- Holliday, G.M., & Testa, E. (2015, March). *A clear argument: How to address literacy standards in the science classroom*. Paper presented at the annual national meeting of the National Science Teachers Association: Chicago, IL.

- Anderson, S., Newton, J., York, J., York, M., Makki, N., Holliday, G.M., & Plaster, K. (2015, March). *Teacher Research Day Session: Woodrow Wilson fellows: Shaping teaching practice through field-based action research*. Paper presented at the annual national meeting of the National Science Teachers Association: Chicago, IL.
- Patrick, P., Gupta, P., Correa, J., Baram-Tsabari, A., Lewenstein, B.V., Rennie, L.J., Howitt, C., Blake, E., Lederman, J.S., & Holliday, G.M. (2015, April). *Informal Science Education: Pedagogy and Epistemology*. Symposium presented at the international conference of the National Association for Research in Science Teaching: Chicago, IL.
- Meyer, A., & Holliday, G. (2016, April). *Pre-service Middle Grades Teachers' Understandings About Scientific Creativity: Perspectives on Teaching for Student Scientific Creativity*. Paper presented for the international conference of the National Association for Research in Science Teaching: Baltimore, MD.
- Buck, G., Akerson, V., Feldman, A., Lederman, N., Lederman, J., Bowen, G.M., Capobianco, H.B., Davis, E., Gilles, B., Hume, A., Makki, N., Holliday, G.M., Marble, S., Subramania, K., Trauth-Nare, A., & Wallace, M. (2016, April). *Administrative Sponsored Symposium - Allowing Our Professional Knowledge of Teacher Education to be Enhanced by Self-Study Research*. Paper presented for the international conference of the National Association for Research in Science Teaching: Baltimore, MD.
- Buck, G., Akerson, V., Feldman, A., Lederman, N., Lederman, J., Bowen, G.M., Capobianco, H.B., Davis, E., Gilles, B., Hume, A., Makki, N., Holliday, G.M., Marble, S., Subramania, K., Trauth-Nare, A., & Wallace, M. (2017, January). *Allowing our Professional Knowledge of Pre-Service Teacher Education to be Enhanced by Self-Study Research: Turning a Critical Eye on Our Practice*. Paper presented at the annual international meeting of the Association for Science Teacher Education: Des Moines, IA.

Regional

- Meyer, E.C., Kennally, K., Zika-Beres, E., & Holliday, G. (1993) *Sibling support and visitation in the neonatal intensive care unit*. Poster presented at the Florida Conference on Child Health Psychology: Gainesville, FL.
- Holliday, G., Meyer, E.C., Kennally, K., & Zika-Beres, E. (1993) *Sibling support and visitation in the neonatal intensive care unit*. Paper presented at the Northern New England Regional Conference of the Association for the Care of Children's Health: Boston, MA.
- Holliday, G. (1995). *Whole science*. Session presented at the Rhode Island Teachers Applying Whole Language (TAWL) Conference: Cranston, R.I.
- Holliday, G.M. (2012, June). *Expanding young children's experiences with inquiry*. Workshop presented at the annual summer institute of the University of Akron's Center for Urban and Higher Education: Akron, OH.

Plaster, K., Pachnowski, L., & Holliday, G. (2012, October). *Using recording and note-taking devices to improve math instruction*. Workshop presented at the annual meeting of the Ohio Council of Teachers of Mathematics: Columbus, OH.

Kearns, J., Faye, C., Holliday, G.M., & Michaels, J. (2015, March). *Focusing on field trips: Partnering with local high school teachers*. Panel presentation at the annual meeting of the Ohio Museums Association: Cleveland, OH.

Makki, N., Plaster, K., & Holliday, G. (2016, December). *Shaping teaching practice through action research*. Presentation at the regional meeting of the National Science Teachers Association, Columbus, OH.

Invited Presentations

Holliday, G.M. (2008). *Assessing learning that occurs at informal science settings*. Paper presented at the Illinois Institute of Technology, Chicago, IL.

Holliday, G.M. (2009). *Informal Science Institutions (ISIs) have been recognized for providing quality professional development for K-12 classroom teachers (NSTA, 1998). However, what is the current ISI professional development model and is this model adequate for the needs of K-12 classroom teachers?* Paper presented at the Illinois Institute of Technology, Chicago, IL.

Holliday, G.M. (2009). *Museum educators' views about nature of science*. Paper presented at the Illinois Institute of Technology, Chicago, IL.

Holliday, G.M. (2010). *Professional development at an informal science institution: Its impact upon elementary and middle school teachers' learning of science content and their content related social interactions (Dissertation Proposal)*. Paper presented at the Illinois Institute of Technology, Chicago, IL.

Holliday, G.M. (2011). *The impact of professional development in informal science contexts on teachers' content knowledge and discourse*. Paper presented at the University of Akron, Akron, OH.

Holliday, G.M. (2014, March). *Using Excel to analyze and code qualitative data*. Workshop presented for the Qualitative Methods course at the Illinois Institute of Technology, Department of Mathematics and Science Education: Chicago, IL.

Holliday, G.M. (2014, July). *Educational Technology in Secondary Classroom*. Workshop presented for the Curriculum course at the Illinois Institute of Technology, Department of Mathematics and Science Education: Chicago, IL.

Holliday, G.M. (2015, March). *Focusing on field trips*. Invited presentation for Woodrow Wilson Teaching Fellowship professional development at the Great Lakes Science Center: Cleveland, OH.

Holliday, G.M. (2015, April). *Using Excel to analyze and code qualitative data*. Presentation for 5100:745 - Qualitative Methods II at the University of Akron, Akron, OH.

Dissertation Committees

Member, Amy Hollingsworth, Dissertation Title: *Q Methodology as a needs assessment tool for Biology graduate teaching assistants participating in an instructional training program*. (November, 2013).

Member, Constantine George Farmakidis, Dissertation Title: *Implications of using a technology integration model*. (October, 2013).

Member, Jennifer Bozeka, Dissertation Title: *The professional development experiences of four nationally board certified teachers of reading-english language arts*. (May, 2015).

Chair, Jennifer Groman, Dissertation Title: *From calling to crisis: The growth process of teacher through crisis-like incidents*. (June, 2015).

Co-Chair, Amy R. Owens-Hartman, Dissertation Title: *A case study of technology choices by high school students*. (December, 2015).

Member, Karl Rishe, Dissertation Title: *A case study: The investigation of how the catholic mission and identity at a small, private, catholic, liberal arts institution is manifested in the institutional culture*. (December, 2015).

Chair, Jennifer Warren, Dissertation Title: *Diversity in dietetics matters: Experiences of minority female registered dietitians in their route to practice*. (May, 2017).

Chair, Huda Bajamal, Dissertation Title: *Saudi third culture kids: A phenomenological case study of Saudis' acculturation in a northeast Ohio elementary school*. (May, 2017).

Member, Rachele Kappler, Dissertation Title: *Changes in physical activity with the use of motivational interviewing in law enforcement officers: a case study*. (May, 2017).

Member, Abdulmonem Alghamdi, Dissertation Title: *Jigsaw as a cooperative learning instructional strategy and the achievement and attitudes of Saudi Arabian male high school science students*. (May, 2017).

Review Responsibilities

2005	Reviewer, NARST Annual Meeting, Strand 4, "Pre-service Teacher Education,"
2007-present	Reviewer, NARST Annual Meeting, Strand 6, "Science Learning in Informal Contexts".
2009-present	Reviewer, NARST Annual Meeting, Strand 8, "In-service Science Teacher Education".

- 2010 Reviewer, NARST Annual Meeting, Strand 13, “History, Philosophy, and Sociology of Science
- 2010 Reviewer, AERA Annual Meeting, Division C, “Learning and Instruction”
- 2012-2014 Reviewer, AERA Annual Meeting, SIG - Informal Learning Environments Research
- 2012-2014 Reviewer, AERA Annual Meeting, SIG - Out-of-School Time
- 2008-present Reviewer, *International Journal of Science Education*.
- 2010-present Reviewer, *International Journal of Science and Mathematics Education*.
- 2013-present Reviewer, *Journal of Science Teacher Education*
- 2014-present Reviewer, *School Science and Mathematics*
- 2014 Reviewer, *European Journal of Psychology of Education*
- 2014-present Reviewer, *Routledge/Taylor & Francis*
- 2014-present Reviewer, *Science Education*

Professional Activities

National

Contributor, Write It \ Do It Event, Rhode Island Science Olympiad, Rhode Island College (1996-2000)

Council for Elementary Science International workshop presenter at NSTA, 2008 “Make-and-Take”

Presider, Global Conversations in Science Education Conference during the 2011 NSTA National Conference (San Francisco, CA, March)

Presider, Global Conversations in Science Education Conference during the 2013 NSTA National Conference (San Antonio, TX, April)

Consultant, Greater Cleveland Aquarium, 2013

Grant Consultant, Institute of Museum and Library Services, *Focusing on Field Trips: Engaging High School Audiences in the History of the Human Sciences*, The University of Akron, OH, 2013

Consultant, National Professional Development Grant funded by the U. S. Department of Education, 2013

Co-Coordinator, Strand 6, Science Learning in Informal Contexts for the National Association for Research in Science Teaching (NARST) annual meeting, 2014-2016

Member, Early Career Research Award Committee for National Association for Research in Science Teaching (NARST), 2014-2017

Member, Program Committee for the National Association for Research in Science Teaching (NARST) annual meeting, 2014-2016

Presider, Strand 6 sponsored session *Translating Theory into Practice in Informal Settings* during the 2015 NARST international conference (Chicago, IL, April)

Presider, Strand 6 *Administrative Sponsored Symposium - Global Perspectives on Trends in Informal Science Education Research* during the 2016 NARST international conference (Baltimore, MD, April)

University/College

Member, Technology Committee, The University of Akron, OH, 2012-2015

Co-Chair, Technology Committee, The University of Akron, OH, 2014-2015

Faculty Advisor, STEMucators student organization, The University of Akron, OH, 2012-current

Member, Search Committee for Visiting Assistant Professor in Social Studies, The University of Akron, OH, 2012-2013

Member, Search Committee for Program Assessment and Support Facilitator (PASF), The University of Akron, OH, 2014-current

Member, Faculty Senate, The University of Akron, OH, 2013-2016

Member, Faculty Research Committee, The University of Akron, OH, 2013-2019

Member, Provost's Advisory Committee, The University of Akron, OH 2014-2015

Member, College of Education Executive Committee, The University of Akron, OH, 2014-2015

Member, Professional Education Council, The University of Akron, OH, 2014-2017

Member, Graduate Council, The University of Akron, OH, 2016-2019

Member, Graduate Faculty Status Committee, The University of Akron, OH, 2016-2018

Professional Honors

College of Education Outstanding Faculty Teaching Award, University of Akron, 2014

Ohio Magazine, Excellence in Education, 2014

College of Education Outstanding Faculty Research Award, University of Akron, 2015

Membership in Academic, Professional, and Scholarly Societies

American Association for the Advancement of Science (AAAS)

American Education Research Association (AERA)

Association for Science Teacher Education (ASTE)
Cleveland Regional Council of Science Teachers (CRCST)
European Science Education Research Association (ESERA)
National Association for Research in Science Teaching (NARST)
National Science Teachers Association (NSTA)
Science Education Council of Ohio (SECO)
Southern African Association for Research in Mathematics, Science, and Technology Education
(SAARMSTE)
Member, Heritage Harbor Museum Special Events Committee, Providence (1998)
Member, Museum Alliance of Providence, Providence (1996)