

Dr. Scott McDonald, Ph.D.

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Professional Experience

ASSOCIATE PROFESSOR, SCIENCE EDUCATION

PENNSYLVANIA STATE UNIVERSITY – 2010 TO PRESENT

DIRECTOR, KRAUSE INNOVATION STUDIO

PENNSYLVANIA STATE UNIVERSITY – 2009 TO PRESENT

VISITING PROFESSOR

MARTIN-LUTHER-UNIVERSITY HALLE-WITTENBERG, GERMANY – 2014

FULBRIGHT SCHOLAR IN SCIENCE EDUCATION

DUBLIN CITY UNIVERSITY, DUBLIN, IRELAND

CENTER FOR THE ADVANCEMENT OF SCIENCE & MATHEMATICS TEACHING AND LEARNING – 2012

ASSISTANT PROFESSOR, SCIENCE EDUCATION

PENNSYLVANIA STATE UNIVERSITY – 2004 TO 2010

Education

PH.D., LEARNING TECHNOLOGIES IN SCIENCE EDUCATION, THE UNIVERSITY OF MICHIGAN. 2004

M.S., SCIENCE EDUCATION, THE UNIVERSITY OF MICHIGAN. 2001

M.A.T., MASTERS AND CERTIFICATION (MAC) PROGRAM, THE UNIVERSITY OF MICHIGAN. 1992

B.S., PHYSICS, THE COLORADO COLLEGE. COLORADO SPRINGS, CO. 1989

Referred Journal Articles

* indicates co-author was current or former student or supervised post-doctoral scholar

Criswell, B., Rushton, G., **McDonald, S.** & Gul, T. (in press, accepted 2016-11-18). A Clearer Vision: Creating and Evolving a Model to Support the Development of Science Teacher Leaders. Research in Science Education. [RISE-D-15-00149R2]

McDonald, S. (2016). The Transparent and the Invisible in Professional Pedagogical Vision for Science Teaching. *School Science and Mathematics*, 116(2), 95-103.

Ozcelik, A.* and **McDonald, S.** (2016) Professional Pedagogical Vision as a Way of Thinking About Reflection on Practice. *School Science and Mathematics*.

Plummer, J. D., Palma, C., *Flarend, A., *Rubin, K., *Ong, Y. S., *Botzer, B., **McDonald, S.** and Furman, T. (2015). Development of a Learning Progression for the Formation of the Solar System. *International Journal of Science Education*, 37(9), 1381-1401. <http://doi.org/10.1080/09500693.2015.1036386>

*Rook, M., *Choi, K and **McDonald, S.** (2015) Learning Theory Expertise in the Design of Learning Spaces: Who Needs a Seat at the Table?. *Journal of Learning Spaces*, 4(1).

*Emig, B., **McDonald, S.**, Zembal-Saul, C. & Strauss, S. G. (2014). Inviting Argument by Analogy: Analogical-Mapping-Based Comparison Activities as a Scaffold for Small-Group Argumentation. *Science Education*.98(2), 243-268

*Rubin, R., Plummer, J., Palma, C., *Flarend, A., Spotts, H., **McDonald, S.** & *Ong, Y.S. (2014). Assessing Student Progress Along a Solar System Learning Progression. *Science Scope*. 38(1) 27-33.

*Sezen, A., *Tran, M., **McDonald, S.P.** and Kelly, G. (2014). A cultural historical activity theory perspective to understand preservice science teachers' reflections on and tensions during a microteaching experience. *Cultural Studies in Science Education*.1-23.

*Osczlik, A. & **McDonald, S.** (2013). Preservice Science Teachers' Uses of Inscriptions in Science Teaching. *Journal of Science Teacher Education*. 24(7),1103-1132.

*Licon, P., **McDonald, S.** and Furman, T. (2013). Student Conceptions of the Cause and Locations of Earthquakes. *The Earth Scientist*, 29(2), pp. 50-54.

*Dreon, O. & **McDonald, S.** (2012). Being in the hot spot: A phenomenological study of two beginning teachers' experiences enacting inquiry science pedagogy. *Teachers and Teaching*. 18(3), 297-313.

McDonald, S.P. (2010) Building a Conversation: Preservice Teachers' Use of Video as Data for Making Evidence-Based Arguments about Practice. *Educational Technology*. 50(1), 28-31.

*Petula, J. & **McDonald, S.P.** (2010) Three-Dimensional Analyses of Teachers' Professional Development. *Catalyst for Change*. 36(1), 23-28.

*Kerlin, S., **McDonald, S.P.** & Kelly, G. (2009). Complexity of Secondary Scientific Data Sources and Students' Argumentative Discourse. *International Journal of Science Education*. 32(9), 1207-1225.

*Kerlin, S., **McDonald, S.P.** & Kelly, G. (2009). Mapping an Inquiry Science Unit. *Journal of Classroom Interaction*. 43(2), 4-13

McDonald, S. P. & Songer, N. B. (2008). Enacting Classroom Inquiry: Theorizing Teachers' Conceptions of Science Teaching. *Science Education*, 92(6), 971-993.

McDonald, S. P. (2008). Seeing the Science: Professional Pedagogical Vision for Instructional Leaders. *Catalyst for Change*, 35(2), 12-18.

McDonald, S. P. & Kelly, G. J. (2007). Understanding the construction of a science storyline in a chemistry classroom. *Pedagogies*, 2(3), 1-12.

Songer, N. B., Lee, H.-S., & **McDonald, S.** (2003). Research Towards an Expanded Understanding of Inquiry Science Beyond One Idealized Standard. *Science Education*, 87, 490-516.

Peer Reviewed Conference Proceedings

*Tietjen, P., **McDonald, S.** & *Rook, M.M. (2016). *Theorizing Learning Spaces: A Sociomaterial Approach*. International Conference of the Learning Sciences (ICLS). Singapore: International Society of the Learning Sciences.

Yotam Hod, Elizabeth S. Charles, Dani Ben-Zvi, Kate Bielaczyc, Manu Kapur, Alisa Acosta, Mei-Hwa Chen, Koun Choi*, Rebecca M. Cober, Yael Kali, Kevin Lenton, **Scott P. McDonald**, Tom Moher, *Michael M. Rook, James D. Slotta, *Phil Tietjen, Patrice (Tamar) Weiss, Chris Whittaker, Jianwei Zhang (2016). *Future Learning Spaces for Learning Communities: New Directions and Conceptual Frameworks*. Symposium at the International Conference of the Learning Science (ICLS). Singapore: International Society of the Learning Sciences.

McDonald, S. (2015). Developing Pedagogical Chefs: Teacher Education as Creativity and Human Centered Design. In J. Settlage & A. Johnston (Eds.), *Proceedings of the Science Education at the Crossroads Conference* (pp. 66 - 67). Cleveland, OH. [Available online at www.sciedxroads.org/proceedings2015.html].

McDonald, S. & Thompson, J. (2014). *Creating Material Representations of Practice at the Boundary of Professional Development and Classroom Practice*. Proceedings of the International Conference of the Learning Sciences (ICLS). Boulder, CO: International Society of the Learning Sciences.

McDonald, S. (2014). Lurching Toward Utopia: Starting Up a Teacher Learning Community. In J. Settlage & A. Johnston (Eds.), *Proceedings of the Science Education at the Crossroads Conference* (pp. 66 - 67). Portland, OR. [Available online at www.sciedxroads.org/proceedings2014.html].

McDonald, S. (2011). Breaking Science Education into Pieces Just Leaves it Broken. In J. Settlage, A. Johnson, S. Dotger & R. Ceglie (Eds.), *Proceedings of the Science Education at the Crossroads Conference* (pp. 58 - 59). San Antonio, TX. [Available online at www.sciedxroads.org/proceedings2011.html].

McDonald, S. (2009). "This is What I Mean by Inquiry...": Building Teachers' Social Capital through Participatory Research. In A. Johnston & J. Settlage (Eds.), *Proceedings of the Science*

Education at the Crossroads Conference (pp. 54 - 55). Portland, OR: National Science Foundation [Available online at www.sciedxroads.org/proceedings2009.html].

McDonald, S. (2008). I Know It When I See It ... the Ephemeral Nature of Classroom Inquiry Science Teaching. In A. Johnston & J. Settlage (Eds.), *Proceedings of the Science Education at the Crossroads Conference* (pp. 60 - 61). Alta, UT: National Science Foundation [Available online at www.sciedxroads.org/proceedings2008.html].

McDonald, S. (2008). *Understanding Professional Vision in Inquiry Science Teaching*. Proceedings of the International Conference of the Learning Sciences (ICLS). Utrecht, The Netherlands: International Society of the Learning Sciences, Inc.

Dreon, O.* & **McDonald, S.** (2006). Using an Online Community of Practice to Foster Inquiry as Pedagogy amongst Student Teachers. *International Conference of the Learning Sciences*. Bloomington, IN.: International Society of the Learning Sciences, Inc.

McDonald, S., & Songer, N. B. (2000). Online Teacher Reflection as a Scaffold to Support Reform-Based Curriculum Implementation. In B. Fishman & S. O'Connor - Divelbiss (Eds.), *International Conference of the Learning Sciences* (p. 324-325) Mahwah, NJ: Lawrence Erlbaum Associates.

Other Publications

McDonald, S.P. & *Rook, M. (2014). Digital Video Analysis to Support the Development of Professional Pedagogical Vision. In B. Calanda & P. Rich (Eds.) *Video analysis in teacher education*. New York: Routledge.

*Rook, M. M. & **McDonald, S. P.** (2012). *Digital records of practice: A literature review of video analysis in teacher practice*. In P. Resta (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference 2012* (pp. 1441-1446). Austin, TX: AACE.

McDonald, S. & Kelly, G. (2012). Beyond Argumentation: The Rich Complexity of Discourse in Science Classroom. In Khine, M.S. (Eds.). *Perspectives on Scientific Argumentation: Theory, Practice and Research*. Dordrecht: Springer.

Kelly, G.J., **McDonald, S.**, & Wickman, P. O., (2012). Science learning and epistemology. In K. Tobin, B. Fraser, & C. McRobbie, (Eds.) *Second International Handbook of Science Education* (pp. 281-291). Dordrecht: Springer.

McDonald, S., *Criswell, B. & *Dreon, O. (2007). Inquiry in the chemistry classroom: explanation generation, perplexity, and synthesis. In Luft, J., Gess-Newsome, J. & Bell, R. (Eds.). *Science as Inquiry in the Secondary Setting*. National Science Teachers Association.

McDonald, S. P. (2005). Review of "Powering Up: Learning to Teach Well with Technology" by Eileen M. Coppola. *Science Education* 89, 1045-1047.

Songer, N.B. and **McDonald, S.** (2001). *Smiling While Guiding Thirty Sixth Graders Through Internet Based Curricula when the Internet is Down (And Other Lessons Learned with One Sky,*

Many Voices Projects). <http://www.ericit.org/newsletter/Volume22-2/songer.shtml>. ERIC on-line newsletter.

Publications - In Progress

McDonald, S., Grimes, P.*, van Kampen, P. (in review, submitted 2016-12-21). Professional Pedagogical Vision and the Impact on Irish Secondary Pre-Service Science Teachers of an Apprenticeship of Observation. *Research in Science Education*. [RISE-D-16-00280]

McDonald, S., Bateman, K.*, Gall, H.*, Tanis-Ozcelik, A.*, Webb, A.* & Furman, T. (in review, submitted 2016-09-02). Learning Progressions: testing hypotheses about Students' developing understandings of plate tectonics. *Journal of Geoscience Education*. [JGE 16-207]

Emig, B.*; **McDonald, S.**; Merritt, M.* and Zembal-Saul, C. (in review, revised and resubmitted 2016-09-06). Exploring Ambiguity in the Space Where Analogies Break Down. *International Journal of Science Education*. [TSED-2016-0121-A.R1]

Grants and Awards

Co-Primary Investigator (2016 - 2020). *Geological models for Explorations Of the Dynamic Earth (GEODE): Supporting middle school students' learning through geodynamic modeling*. National Science Foundation, Discovery Research K-12, Early State Full Design and Development Project to the Teaching Strand (DRK-1621176). \$761,623 (Subcontract).

Co-Primary Investigator (2010 - 2015), *Targeted Math Science Partnership - Middle Grade Earth and Space Science Education*. Math Science Partnership (MSP) Project. National Science Foundation (DUE - 0962792). \$9,181,723.

Primary Investigator (2012), *The Cross Cultural Nature of Professional Pedagogical Vision*, The Fulbright Association. \$18,200.

Co-Primary Investigator (2012 - 2013), *Faculty practices in creating and managing personal digital archives*. Andrew E. Mellon Foundation. \$143,000

Project Faculty (2010 - 2015), *Improving the Recruitment and Preparation of Secondary School Biology Teachers*. Howard Hughes Medical Institute. \$1,000,000.

Primary Investigator and Project Director (2008 - 2010), *Understanding Professional Pedagogical Vision for Inquiry Science Teaching*. Knowles Science Teaching Foundation, Early Career Research Fellowship. \$110,000.

Outstanding Teaching Award (2009), College of Education, The Pennsylvania State University.

Computer Supported Collaborative Learning (CSCL) Early Career Workshop Participant (2007) [selective]

International Conference of the Learning Sciences (ICLS) Early Career Workshop Participant (2006) [selective]

Author and Project Director (2005), *The Invisible College for Inquiry Science Study (ICISS)*, A grant from The Pennsylvania State University College of Education Research Initiation Program, \$8,925.

International Conference of the Learning Sciences (ICLS) Doctoral Consortium Participant (2002) [selective]

Invited Presentations

McDonald, S. (2015). *Designing Learning Spaces with Learning Theory in Mind*. Educause Learning Initiative (ELI) Webinar Series. <http://www.educause.edu/events/eli-webinar-designing-learning-spaces-learning-theory-mind>.

McDonald, S., Lewis-King, T. and Nolan, J. (2015). *The Change Game: Understanding Science Teacher Leadership*. Invited Keynote at the annual Pennsylvania Earth and Space Science Teachers Association conference. Philadelphia, PA

McDonald, S. (2015). Keynote, HackPSU, Pennsylvania State University Hack-a-thon. State College, PA.

McDonald, S. & Lewis-King, T. (2013). *Science Teacher Leadership: In and Out of the Classroom*. Invited Keynote at the annual Pennsylvania Earth and Space Science Teachers Association conference. Media, PA.

McDonald, S. (2013). *Designing Innovative Technology - Supported Spaces to Support Collaborative Learning*. Halle Centre for Multimedia Teaching and Learning (@ LLZ) Martin-Luther-University Halle-Wittenberg.

McDonald, S. (2013). *Professional Pedagogical Vision as an Evolving Cultural Practice for Preservice Science Teachers*. Martin-Luther-University Halle-Wittenberg, Germany.

McDonald, S. P. (2013). *Professional Pedagogical Vision as an Evolving Cultural Practice for Preservice Science Teachers*. Invited talk. University of Stockholm, Sweden.

McDonald, S. P. (2013). *Research to Support Ambitious Science Teaching: Learning Progressions and Professional Vision*. Invited talk. CASTeL Center, University of Dublin, Ireland.

McDonald, S. P. (2010). *Using Video Analysis to Develop Beginning Teachers' Pedagogical Expertise in Science*. Invited Talk. University of Leeds, England.

Conference Papers, Presentations and Other Talks

Gray, R., Braaten, M., Ross, D.K., Stroupe, D., Howes, E., Wolff, D., Settlage, J., **McDonald, S.**, Johnson, H., and Mawyer, K. (2017). *Affordances and Challenges of Framing Science Teacher Preparation Programs Around Core Practices*. Symposium presentation at NARST annual meeting in San Antonio, TX (April 22 - April 25, 2017).

Tietjen, P.*, Ozken-Bekiroglu, S.*, Choi, K.*, Rook, M.M.*, **McDonald, S.** (2017). A Sociomaterial Investigation of an Active Learning Space. Annual Meeting of the American Educational Research Association, San Antonio, TX.

Rook, M. M.*, **McDonald, S. P.**, Choi, K.*, & Tietjen, P.* (2016). *Facilitating bridges of practice among multiple learning communities*. Poster proposed as part of Symposium session (titled Future learning spaces for learning communities: New directions and conceptual frameworks; Hod et al.) at the 12th International Conference of the Learning Sciences, Singapore.

McDonald, S. and Ozcelik, A.* (2016). *Negotiating Tensions: Development of Ambitious Science Teaching Practices*. Paper presentation at the NARST, Baltimore, MD (April 14 - April 17, 2016).

Maeng, S., Plummer, J., **McDonald, S.**, Kangwon, K.L., Palma, C., Park, Y-S, Duschl, R. And Furman, T. (2016). Methodological Approaches to the Development of Earth and Space Science Learning Progressions. Symposium at *NARST Annual Meeting*, Baltimore, MD (April 14 - April 17, 2016).

Stroupe, D., Settledge, J., **McDonald, S.** (2016). Preparing novices for ambitious instruction: A look at different opportunities in learning settings. Symposium presentation at *NARST Annual Meeting*, Baltimore, MD (April 14 - April 17, 2016).

Olcese, N., Taylor, P.*, Merrit, M.*, **McDonald, S. P.**, Rook, M. M.*, Norton, P., & McKinzie, C. (2016). "I feel like this is just for play!": Investigating the exclusive use of iPads in a STEM-focused teacher candidate cohort. Round table session at the *Annual Conference of the Society for Information Technology and Teacher Education*, Savannah, GA.

Choi, K.*, Rook, M.* and **McDonald, S.** (2016). *Comparing the Built Pedagogy in a Learning Space with Patrons' Experiences: An Analysis of Two Perspectives*. Poster presentation at the annual meeting of the American Educational Research Association (AERA), Baltimore, MD.

McDonald, S., Bateman, K.*, Ozcelik, A.*, Gall, H.*, Webb, A.* and Furman, T. (2015). *Understanding Students' Ideas about Plate Tectonics: A Learning Progressions Approach*. Paper presentation at the annual meeting of the Geological Society of America (GSA), Baltimore, MD.

Bateman, K.*, **McDonald, S.** and Furman, T. (2015). *The Challenge of Assumptions: A Comparison of Curricular Materials and Empirical Learning Progressions in Middle Grades Plate Tectonics*. Paper presentation at the annual meeting of the Geological Society of America (GSA), Baltimore, MD.

Webb, A.*, **McDonald, S.**, Furman, T., Gall, H.*, Bateman, K.* and Ozcelik, A.* (2015). *A Plate Tectonics Multiple Choice Assessment: A Pilot*. Paper presentation at the annual meeting of the Geological Society of America (GSA), Baltimore, MD.

*Choi, K., *Rook, M., **McDonald, S.** (2015). *Experiencing Informal Learning Spaces*, Association for Educational Communications and Technology (AECT) International Convention, Jacksonville, Florida.

*Grimes, P., van Kampen, P., **McDonald, S.**, Finlayson, O. and McLoughlin, E. (2015). *Professional Vision of Inquiry Based Science Education: An Analysis of the Highlighting and Coding Practices of Pre-Service Science Teachers in Ireland and the U.S.*. European Science Education Research Association (ESERA), Helsinki, Finland.

*Osczlik, A. & **McDonald, S.** (2015). *Discourse Practices across Science Education Contexts*. Paper presentation at the annual meeting of the National Association of Research on Science Teaching (NARST), Chicago, IL.

Thompson, J., Bell, P., Shouse, A., Penuel, W. & **McDonald, S.** (2015). *Models of Practice-Based Professional Development in Support of Next Generation Science Standards*. Symposium presentation at the annual meeting of the National Association of Research on Science Teaching (NARST), Chicago, IL.

Palma, C., Plummer, J., Ghent, C., Gleason, T., Ong, Y.S., & **McDonald, S.** (2015). *Have Astronauts Visited Neptune? Student Ideas about How Astronomers Study the Solar System*. Poster presentation at the annual meeting of the National Association of Research on Science Teaching (NARST), Chicago, IL.

Palma, C., Plummer, J., Ghent, C., Gleason, T., Ong, Y.S., & **McDonald, S.** (2015). *Have Astronomers Been to Neptune? Results of a Study of High School Students' Ideas about How Astronomers Study the Solar System*. In American Astronomical Society Meeting Abstracts (Vol. 225), Seattle, WA.

*Osczlik, A. & **McDonald, S.** (2015). *Science Teacher Candidates' Developing Professional Vision in Science Teaching*. Paper presentation at the annual meeting of the American Educational Research Association (AERA), Chicago, IL.

McDonald, S., Plummer, J., Rivet, A., Delgado, C., Kastens, K., *Flarend, A., *Rubin, K., *Pickard, M., *Bembenic, M., & Anderson, C. (2014). *Integrating Crosscutting Themes, Practices, and Core Ideas: Learning Progressions in Earth and Space Science Symposium*. Symposium organized at the annual meeting of the National Association for Research in Science Teaching (NARST), Pittsburgh, PA.

Kang, H., Stroupe, D., Hagenah, S., Thompson, J., Braaten, M., **McDonald, S.** & Larkin, D. (2014). *Rigorous and Responsive Learning by Design: Transforming Classrooms and Practice-Based Teacher Education*. Symposium organized at the annual meeting of the National Association for Research in Science Teaching (NARST), Pittsburgh, PA.

*Rook, M. M., **McDonald, S. P.**, & *Safran, M. (2014). *The Forgotten Technology: Understanding our Learning Spaces*. Symposium for Teaching and Learning with Technology, The Pennsylvania State University.

McDonald, S., *Bembenic, M., Guertin, L., *Licona, P., *Preston, S., and Furman, T. (2013). *Developing a Hypothetical Learning Progression for Plate Tectonics*. Poster presented at the annual meeting of the National Association for Research on Science Teaching (NARST), Rio Grande, PR.

*Rook, M. M., & **McDonald, S. P.** (2013). *Investigating Built Pedagogy: How Learning Theory Contributes to the Design of a Learning Space*. Annual Conference of the American Educational Research Association (AERA), San Francisco, CA.

McDonald, S. & *Brightbill, B. (2013). *Science Teacher Leadership: What can you do to lead?* Presented at the Pennsylvania Science Teachers Association Annual Meeting. State College, PA.

Guertin, L.A., Furman, T., Mundry, S., Lewis-King, T. & **McDonald, S.** (2013). Teacher professional development through the Pennsylvania Earth Science Teachers Association (PAESTA). *Abstracts with Programs (Geological Society of America)*, 45, 659.

Furman, T., **McDonald, S.**, Guertin, L., Plummer, J., Palma, C., Lauver, S., Lewis-King, T., Mundry, S. (2013). *The Pennsylvania Earth and Space Science Partnership: Midlife Reflections on Success, Struggles and Change*. Presented at Math and Science Partnership (MSP) Learning Network Conference (LNC), Washington, DC.

Palma, C., *Flarend, A., *Petula, J., Richards, M., Spotts, H., **McDonald, S.**, and Furman, T. (2013). *Design, Delivery, and Results of the Earth and Space Science Partnership Teacher Professional Development Program*. American Astronomical Society Meeting Abstracts, 221, #342.08

McDonald, S.P. (2012). *Professional pedagogical vision as an evolving cultural practice for preservice science teachers*. Paper presentation at the annual meeting of the American Educational Research Association (AERA), Vancouver, BC, Canada.

McDonald, S., Furman, T., & Guertin, L. (2012). *Refining Learning Progressions in Astronomy and Plate Tectonics*. Presented at Math and Science Partnership (MSP) Learning Network Conference (LNC), Washington, DC.

McDonald, S. & Cahoy, E. (2012). *Digital Scholarship: How Digital Tools are Reshaping Academic Work*. Presentation at the Penn State Symposium for Teaching and Learning with Technology. State College, PA.

McDonald, S.P. (2011). *Digital intellectual life(stream): Using emerging technology tools to do intellectual work*. Invited talk at the annual meeting of the National Association for Research on Science Teaching, Orlando, FL.

McDonald, S., Furman, T., & Palma, C. (2011). *Developing Learning Progressions in Earth and Space Science as a Tool for Teacher Professional Development and Student Learning*. Presented at Math and Science Partnership (MSP) Learning Network Conference (LNC), Washington, DC.

Cahoy, E. & **McDonald, S.P.** (2011). *Curating Digital Intellectual Lives: A Discipline-based Approach*. Conference on Personal Digital Archiving, San Francisco, CA.

McDonald, S.P. (2010). *Developing professional vision: Learning to notice in complex classroom settings*. Paper presentation at the annual meeting of the American Educational Research Association (AERA), Denver, CO.

*Dreon, O. & **McDonald, S.P.** (2010). *New science teachers' descriptions of inquiry enactment*. Paper presentation at the annual meeting of the American Educational Research Association (AERA), Denver, CO.

Cahoy, E.S., *Gael, P. & **McDonald, S.P.** (2010) *Citation and Personal Library Management as Research Literacy*. Elsevier Scholarly Perspectives Webcast.

McDonald, S., *Criswell, B., *Delone, S. & *Tang, C. (2010). *The Invisible College for Inquiry Science Study (ICISS): Integrating teaching and research in a professional community*.

Symposium Presentation at the annual meeting of the National Association for Research on Science Teaching, Philadelphia, PA.

McDonald, S. (2010). *Minding the research-practice gap: Attending to the dialogic nature of research AND practice*. Invited Panelist at the annual meeting of the National Association for Research on Science Teaching, Philadelphia, PA.

McDonald, S.P., *Delone, S., *Criswell, B. and *Kerlin, S. (2009). *Engaging with Teachers around Science Education Research*. Invited Presentation at the annual meeting of the National Association for Research on Science Teaching, April 17-21, Garden Grove, CA.

McDonald, S.P., *Criswell, B. and *Kerlin, S. (2009). *The Impact Of Video Analysis On The Development Of Professional Vision In Preservice And Practicing Teachers*. Invited Presentation at the annual meeting of the National Association for Research on Science Teaching, April 17-21, Garden Grove, CA.

*Emig, B., **McDonald, S.P.** and Zembal-Saul, C. (2009). *Analogical Reasoning*. Paper presented at the annual meeting of the National Association for Research on Science Teaching, April 17-21, Garden Grove, CA.

*Sezen, A., *Tran, M., **McDonald, S.P.** and Kelly, G. (2009). *Pre-service Science Teachers' Reflections upon their Micro-teaching Experience: An Activity Theory Perspective*. Paper presented at the annual meeting of the National Association for Research on Science Teaching, April 17-21, Garden Grove, CA.

McDonald, S.P. (2009). *Video Analysis in Teacher Preparation and Professional Development*. Invited discussant at the annual meeting of the American Educational Research Association, April 14-18, San Diego, CA.

McDonald, S.P. (June 2008). *Understanding Professional Vision in Inquiry Science Teaching*. Poster Presentation at the International Conference of the Learning Sciences (ICLS). Utrecht, The Netherlands.

McDonald, S.P. (2008). *Understanding Professional Vision in Inquiry Science Teaching*. Presentation at the National Association for Research on Science Teaching. Baltimore, MD.

*Criswell, B. & **McDonald, S.P.** (2008). *An Investigation of the 'Dead End' Participant Structure -- Examining How Student Cognitive Factors and Teacher Beliefs Impact Its Contribution to Progressive Discourse*. Presentation at the National Association for Research on Science Teaching. Baltimore, MD.

*Dreon, O. & **McDonald, S.P.** (2008). *Tackling Tensions: The Development of Professional Identity through Participation in a Community of Practice*. Presentation at the National Association for Research on Science Teaching. Baltimore, MD.

*Kerlin, S. & **McDonald, S.P.** (2008). *Student Argumentative Discourse in a Seismology Inquiry Unit*. Presentation at the National Association for Research on Science Teaching. Baltimore, MD.

*Kerlin, S. & **McDonald, S.P.** (2008). *Mapping a Science Inquiry Unit*. Presentation at the Hawaii International Conference on Education.

*Dreon, O, Criswell, B. & **McDonald, S.P.** (2007). *Mentoring new inquiry-minded science teachers: Experiences from ICISS*. Presentation at How People Learn: The Implications of Learning Research for Science Education. Lancaster, PA.

*Dreon, O & **McDonald, S.P.** (2007). *Negotiating Contradictions: The Development of Professional Identity through Participation in a Community of Practice*. Presentation at the Annual Meeting of the National Association for Research on Science Teaching (NARST), New Orleans, LA.

McDonald, S.P. & Kelly, G. J. (2007). *Building the Science Storyline Using the Mole Concept*. Presentation at the Annual Meeting of the National Association for Research on Science Teaching (NARST), New Orleans, LA.

*Dreon, O. and **McDonald, S. P.** (2006). *Using an Online Community of Practice to Foster Inquiry as Pedagogy amongst Student Teachers*. Presentation at the International Conference of the Learning Sciences. Bloomington, IN.

McDonald, S. P. (2006). *Defining Inquiry in Practice: The Invisible College for Inquiry Science Study (ICISS)*. Presentation at the Annual Meeting of the American Educational Research Association (AERA). San Francisco, CA.

McDonald, S. P. (2004). *Research Towards Varied Models of Classroom-Based Inquiry Science*. Presentation at the Annual Meeting of the American Educational Research Association (AERA). San Diego, CA.

McDonald, S. P. (2004). *Teacher Choices About Inscriptional and Technological Practices While Enacting Inquiry Science*. Presentation at the Annual Meeting of the National Association of Research on Science Teaching (NARST). Vancouver, BC.

McDonald, S. P. (2002). *Teachers' Use of Scientific Inscriptions and Argumentation in Building Inquiry Understandings*. Doctoral Consortium at the International Conference of the Learning Sciences (ICLS). Seattle, WA.

McDonald, S. P., & Songer, N.B. (2001). *How teacher define and enact reflection in an online community*. Presentation at the Annual Meeting of the American Educational Research Association (AERA). Seattle, WA.

McDonald, S. & Songer, N. B. (1999) *Research Issues in the Design of Online Communities*. Presentation at workshop at the Annual Meeting of Computer Human Interaction (CHI). Pittsburgh, PA.

McDonald, S. & Songer, N. B. (1999). *How to make your students into Hurricane scientists: A One Sky, Many Voices Program*. Presentation at the National Science Teachers Association (NSTA) Regional Conference. Detroit, MI.

McDonald, S., & Modena, J. (1996). *Publishing Student Work on the World Wide Web*. Presentation at the Annual meeting of the Massachusetts Computer Using Educators (Mass CUE). Springfield, MA.

Design and Development

SCIED 552: Science Teaching and Learning [formalized this course through curricular affairs in 2011 and developed World Campus version in 2016]

SCIED/MTHED 460: Trends and Issues in Science, Technology, Engineering, and Mathematics (STEM) Education [co-developed with Fran Arbaugh for World Campus 2015]

McDonald, S. (2007). *Curriculum for School Leadership in Excellent Science Teaching*. National Institute for School Leadership, Washington, D.C.

Songer, N.B., Huber, A., Adams, K., Chang, H.Y., Lee, H.S., **McDonald, S.P.**, Jones, T. (2002) *BioKIDS: Kids' Inquiry of Diverse Species, An Eight-Week Inquiry Curriculum using Simple, Powerful Technologies*.

Parr, C.S., Espinosa, R., Jones, T., **McDonald, S.**, Songer, N.B., Myers, P. (2002) *Introductory-level CyberTracker sequence for Detroit-area wildlife. The University of Michigan. [Inquiry Fostering Software]*

Courses Taught

SCIED 412: Secondary Science Teaching II

SCIED 552: Science Teaching and Learning [both residence and on World Campus]

SCIED/MTHED 460: Trends and Issues in Science, Technology, Engineering, and Mathematics (STEM) Education [World Campus]

C I 597X: Disruptive Technologies in Teaching and Learning [developed this course]

C I 597X: Video Analysis Methodologies

C I 597X: ICISS: The Invisible College for Inquiry Science Study

Workshop Facilitation

Lead Facilitator, Earth and Space Science Partnership Summer Professional Development Workshop - Climate and Climate Change. University Park Campus. 2014.

Lead Facilitator, Earth and Space Science Partnership Summer Professional Development Workshop - Climate and Climate Change. Brandywine Campus. 2014.

Facilitator, Inquiry Assessment Workshop for Center for the Advancement of Science & Mathematics Teaching and Learning, Dublin City University, Dublin, Ireland, 2013.

Lead Facilitator, Earth and Space Science Partnership Summer Professional Development Workshop - Energy. University Park Campus. 2012.

Lead Facilitator, Earth and Space Science Partnership Summer Professional Development Workshop - Hurricanes. University Park Campus. 2011.

Lead Facilitator, National Institute for School Leadership (NISL) Workshop on Excellence in Science Teaching: Scranton, PA (2007); Boston, MA (2008); Marlborough, MA (2008); Lawrence, MA (2008); Chambersburg, PA (2008); Williamsport, PA (2008); Pueblo, CO (2009 & 2010).

Lead Facilitator, Pennsylvania Inspired Leadership Workshop on Excellence in Science Teaching, 2011.

Professional Activities and Service

PROFESSIONAL SERVICE TO FIELD AND CONSULTING

State College Area School District, K-12 Science Curriculum Revision Committee, 2015-present.

National Association for Research in Science Teaching (NARST) Standing Website Provider Committee, Chair, 2015 - present.

Institute of International Education, Council for the Exchange of International Scholars, Fulbright Scholars Panel Reviewer, 2014, 2015 & 2016.

National Board of Professional Teaching Standards, ATLAS Video analysis platform development consultant, 2013.

Microsoft National Teacher Education Advisory Board, Member, 2011-2012.

Outstanding Paper Awards Committee, Journal of Research on Science Teaching (JRST), 2007 - 2009.

NARST Sandy K. Abell Institute for Doctoral Students, Mentor/Co-Facilitator, Colorado Springs, CO., 2011

Outstanding Paper Awards Committee, National Association of Research on Science Teaching (NARST), 2005 & 2006.

Program Chair, Special Interest Group for Advanced Technologies for Learning (SIG ATL) of the American Educational Research Association (AERA). 2006.

Coordinator of Student Volunteers - International Conference of the Learning Sciences (ICLS). Ann Arbor, MI, 2000.

SERVICE TO THE UNIVERSITY

Learning Spaces Leadership Committee, Member. 2016 - present

Security Standards Task Force, Member. 2017

Kozak Award Committee, Member. 2010 - 2016

New Classroom and Laboratory Building Program Committee, Member. 2014 - 2015

Task Force for Shared Programs, Member. 2014 - 2015

Teaching and Learning with Technology (TLT) Symposium, Strand Reviewer - Learning Spaces. 2015

Teaching and Learning with Technology (TLT) Symposium Program Committee, Member. 2014 - 2015

Provost's Learning Spaces Study Group, Member. 2012 - 2013

SSRI Steering Committee, Member. 2011 - 2015

SERVICE TO THE COLLEGE OF EDUCATION

Educational Psychology Faculty Search Committee, Member. 2016-17

Learning Sciences Task Force, Member. 2015 - present

Curriculum and Instruction Department Head Search Advisory Committee, Chair. 2014 - 2015

Sabbatical Leave Committee, Member. 2013 - 2015.

Learning Sciences Faculty Search Committee, Member. 2013 - 2015.

Faculty Council, Member. 2006- 2008. Secretary. 2007 - 2008.

Graduate Studies and Research Standing Committee, Chair. 2007 - 2008.

Waterbury Chair Search Committee, Member. 2006 - 2007

SERVICE TO THE DEPARTMENT OF CURRICULUM AND INSTRUCTION

Program Coordinator, Science Education, 2011 - present.

Curricular Affairs Committee, Member. 2005 - 2007 and 2014 to present.

Graduate Staff Assistant Search Committee, Member. 2014.

Chair, Science Education Faculty Search Committee, Member. 2011.

Author, NCATE Accreditation for Secondary Science Education 2011 - 2012

Climate Committee, Member. 2005- 2011; Chair 2005 - 2010.

Science Education Faculty Search Committee, Chair. 2005.

EDITORIAL BOARDS, REVIEW BOARDS, AND REVIEWING

Editorial Review Board, *Journal of Research on Science Teaching*. 2013 to 2016

Associate Editor, *Journal of Teacher Education*. 2010 to 2015.

Editorial Board Member, *Journal of Learning Spaces*. 2010 - 2013.

Associate Editor - Commentary Section. *Technology, Humanities, Education, and Narrative (THEN)*. 2004 - 2010.

Contributing Editor, *Educational Technology Research & Development*. 2002 - 2014.

Ad Hoc Reviewer:

International Journal of Science Education

Journal of the Learning Sciences

Journal of Experimental Psychology

Journal of Research in Science Teaching

Journal of Science Teacher Education

Journal of Teacher Education

Journal of Science Education and Technology

Science Education

PROPOSAL REVIEWER:

American Educational Research Association (AERA) Annual Meetings

National Association of Research on Science Teaching (NARST) Annual Meetings

International Conference of the Learning Sciences (ICLS)

Senior Reviewer: 2014, 2016

Computer Supported Collaborative Learning (CSCL)

MEMBERSHIPS

American Educational Research Association (AERA), including SIGs:

Advanced Technologies for Learning (ATL),

Education in Science and Technology (EST), and

Learning Sciences (LS).

National Association for Research in Science Teaching (NARST)

International Society of the Learning Sciences (ISLS)

National Science Teachers Association (NSTA)