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ACADEMIC BACKGROUND

- 2007 Ph.D., Mathematics Education
 Rutgers University, New Brunswick, NJ
- 2000 M.A., Mathematics
 Sam Houston State University, Huntsville, TX
- 1992 B.S. Mathematics
 Purdue University, West Lafayette, IN

PROFESSIONAL EXPERIENCE

UNIVERSITY EXPERIENCE

- 2022 - Professor, Mathematics Education
 Department of Mathematics and Statistics
 University of North Carolina at Charlotte, Charlotte, NC
- 2020 - 2022 Associate Professor, Mathematics Education
 Department of Mathematics and Statistics
 University of North Carolina at Charlotte, Charlotte, NC
- 2017 - 2020 Assistant Professor, Mathematics Education
 Department of Mathematics and Statistics
 University of North Carolina at Charlotte, Charlotte, NC
- 2014 - 2017 Undergraduate Coordinator, STEM Education & Mathematics Education
 Department of Science, Technology, Engineering, and Mathematics Education
 NC State University, Raleigh, NC
- 2013 - 2017 Park Faculty Scholar, Provost Appointed Position
 NC State Park Scholars Program
 NC State University, Raleigh, NC
- 2013 - 2017 Associate Professor, Mathematics Education
 Department of Science, Technology, Engineering, and Mathematics Education
 NC State University, Raleigh, NC

- 2007 – 2013 Assistant Professor, Mathematics Education
Department of Science, Technology, Engineering, and Mathematics Education
NC State University, Raleigh, NC
- 2005 – 2007 Graduate Research Fellow
MetroMath Center, The Center for Mathematics in America’s Cities
Rutgers, The State University of New Jersey, New Brunswick, NJ
- 2005 – 2007 Adjunct Instructor, Mathematics
Department of Mathematics
Rutgers, The State University of New Jersey, New Brunswick, NJ
- 2003 – 2004 Graduate Research Assistant, Online Learning Project
Department of Educational Psychology
Rutgers, The State University of New Jersey, New Brunswick, NJ
- 2001 – 2002 Adjunct Instructor, Mathematics
Department of Mathematics
Montgomery County Community College, Montgomery, TX

K-12 TEACHING EXPERIENCE

- 2002 – 2003 Mathematics Teacher, Oak Ridge High School
Conroe Independent School District, Conroe, TX
- 2000 – 2001 Mathematics Teacher, Northwood High School
Irvine Unified School District, Irvine, CA
- 1993 – 2000 Mathematics Teacher, Tomball High School
Cross Country/Track & Field Coach, Tomball High School
Tomball Independent School District, Tomball, TX
- 1992 – 1993 Mathematics Teacher, Grantham Middle School
Aldine Independent School District, Houston, TX

HONORS, AWARDS & RECOGNITION

- 2024 Selected by the Research Council on Mathematics Learning to serve a 2nd term on the Editorial Board for *Investigations in Mathematics Learning* Journal.
- 2021 Selected by the Board of the Association of Mathematics Teacher Educators to serve a three-year term (beginning February 2022) as Associate Vice-President (Co-Editor) of the AMTE Sponsored Journal *Contemporary Issues in Technology and Teacher Education – Mathematics*.
- 2021 Awarded the *National Technology Leadership Initiative Fellowship for Mathematics Education*, co-sponsored by the Society for Technology and Teacher Education and Association of Mathematics Teacher Education, for best

- research paper “Using a framework to teach preservice mathematics teachers how to professionally notice within technology mediated environments”.
- 2020 Selected by the Research Council on Mathematics Learning to serve on the Editorial Board for *Investigations in Mathematics Learning* Journal.
- 2018 Selected by the president of the Association of Mathematics Teacher Educators to serve on the Editorial Board of the AMTE Sponsored Journal *Contemporary Issues in Technology and Teacher Education – Mathematics*.
- 2018 Awarded the North Carolina Council of Teachers of Mathematics *Innovator Award* for my leadership in the *North Carolina Collaborative for Mathematics Learning* and our work supporting mathematics teachers across the state of North Carolina. This award recognizes outstanding and noteworthy contributions to mathematics education in North Carolina by having founded, initiated, pioneered, or developed some program of service that benefits mathematics education across the state.
- 2018 Awarded the *National Technology Leadership Initiative Fellowship for Mathematics Education*, co-sponsored by the Society for Technology and Teacher Education and Association of Mathematics Teacher Education, for best research paper “Preservice mathematics teachers’ professional noticing of students’ mathematical thinking with technology”.
- 2017 Recognized by the NC State Thank a Teacher Program through the NC State Office of Faculty Development.
- 2017 Elected President-elect of the North Carolina Chapter of the Association of Mathematics Teacher Educators.
- 2016 Nominated for the NC State Outstanding Faculty Advisor Award. Awarded at College level. Not selected at the University level.
- 2015 Recognized by the NC State Thank a Teacher Program through the NC State Office of Faculty Development.
- 2014 Recognized by the NC State Thank a Teacher Program through the NC State Office of Faculty Development.
- 2013 Appointed by the NC State Chancellor as *Park Faculty Scholar* for the Park Scholars Class of 2017.
- 2012 Awarded the *Silvius-Wolansky Outstanding Publication Award*, sponsored by the Council on Technology & Engineering Teacher Education, for the best paper published in the journal during 2012 – 2013 for the paper “Signature Approaches to Support STEM Integration”.
- 2011 Recognized by the NC State Thank a Teacher Program through the NC State Office of Faculty Development.
- 2010 Nominated by the NC State College of Education for the NC State Outstanding Teaching Award. Not selected at the University level.
- 2009 Awarded best early career conference paper at the 12th Conference on Research in Undergraduate Mathematics Education, Sponsored by the Special Interest Group of the Mathematical Association of America on Research in

Undergraduate Mathematics Education for the paper “Mathematicians, Mathematics Educators and High School Mathematics Teachers Interpretations and Judgments Regarding Calculus Students’ Problem Solving Methods”.

- 1998 Awarded the *Tandy Technology Scholars National Outstanding Teacher Award*, a national teaching award sponsored by Tandy Corp. and RadioShack recognizing teachers who have “achieved excellence in the areas of science, computer science, and mathematics”.
- 1996 Awarded the *A+ Teacher Award*, recognizing the Tomball Independent School District high school teacher of the year.

SCHOLARSHIP

PEER-REVIEWED JOURNAL ARTICLES

Note: *graduate student, **undergraduate student

NC2ML (accepted). The “We All Speak Math” Campaign: Gaining statewide traction on meaningful mathematical discourse. Submitted to *Mathematics Teacher: Teaching and Learning PreK – 12 – Special Issue on Gaining Traction with Actions*. Note: Holt Wilson and I lead the writing on this manuscript.

Wilson, P.H., **McCulloch, A.W.**, Wonsavage, F.P.*, Hare, E.*, & Baucom, L.* (2024). Secondary teachers’ anticipations of student responses to cognitively demanding tasks. *Investigations in Mathematics Learning*. <https://doi.org/10.1080/19477503.2024.2309109>

Meagher, M., Lovett, J., **McCulloch, A.W.** (2023). Middle school students’ development of an understanding of function using an applet with no algebraic representations. *School Science and Mathematics*. <https://doi.org/10.1111/ssm.12622>

McCulloch, A.W., Dick, L.K., & Lovett, J.N. (2023). A framework for teacher noticing of students’ mathematical thinking in technology tool-mediated learning environments. *School Science and Mathematics Special Issue on Teacher Noticing*. <https://doi.org/10.1111/ssm.12601>

Bailey, N.*, & **McCulloch, A.W.**, (2023). Habits of Mind Related to Critical Statistical Literacy: A Framework. *Journal of Mathematical Behavior, Special Issue on Mathematics in society: Exploring the mathematics that underpins social issues*. <https://doi.org/10.1016/j.jmathb.2023.101063>

Dick, L., Lovett, J. N., **McCulloch, A. W.**, Bailey, N. G., Yalman Ozen, D., & Cayton, C. (2022). Preservice teacher noticing of students’ mathematical thinking in a technology-mediated learning environment. *International Journal for Technology in Mathematics Education*, 29(3), 129-142. DOI: 10.1564/tme_v29.3.02

Bailey, N.G.*, Yalman Ozen, D.*, Lovett, J.N., **McCulloch, A.W.**, Dick, L., & Cayton, C. (2022). Using a framework to develop preservice teacher noticing of students’ mathematical thinking within technology-mediated learning environments.

Contemporary Issues in Technology and Teacher Education, 22(1).

<https://citejournal.org/volume-22/issue-3-22/mathematics/using-a-framework-to-develop-preservice-teacher-noticing-of-students-mathematical-thinking-within-technology-mediated-learning/>

Unal, D.O., Hollebrands, K.F., **McCulloch, A.W.**, Scher, D., & Stekettee, S. (2022). Prospective High School Mathematics Teachers' Uses of Diagrams and Geometric Transformations While Reasoning About Geometric Proof. *International Journal for Technology in Mathematics Education*, 29(1), 13-24, 10.1564/tme_v29.1.02

McCulloch, A.W., Lovett, J.N., Sherman, M., & Meagher, M. (2022). Challenging preservice secondary mathematics teachers' conceptions of function. *Mathematics Education Research Journal*, 34, 343 – 368. doi.org/10.1007/s13394-020-00347-6

McCulloch, A.W., Lovett, J.N., Dick, L.K., & Cayton, C. (2021). Positioning each and every student as a mathematical explorer with technology. *Mathematics Teacher: Learning and Teaching PK-12: Special issue on Digital Equity and the Digital Divide*. 114(10), 738-749, 10.5951/MTLT.2021.0059

Bailey, N.*, Yalman Ozen, D.*, Lovett, J.N., **McCulloch, A.W.**, Cayton, C. (2021). Parameters, sliders, marble slides, oh my! *Mathematics Teacher: Learning and Teaching PK-12*, 114(5), 386 - 394.

Hollebrands, K.F., **McCulloch, A.W.**, & Okumus, S. (2021). High school students' strategies for reasoning about geometric representations of function. *Digital Experiences in Mathematics Education*, <https://doi.org/10.1007/s40751-021-000085-9>.

Dick, L., **McCulloch, A.W.**, & Lovett, J.N., (2021). When students use technology tools, what are you noticing? *Mathematics Teacher: Learning and Teaching PK-12*, 114 (4), 272 – 283. <https://doi.org/10.5951/MTLT.2020.0285>.

McCulloch, A.W., Lovett, J.N., Dick, L.K., Sherman, M.F., Edgington, C., & Meagher, M. (2020) Eliciting the coordination of preservice secondary mathematics teachers' definitions and concept images of function. *International Journal of Mathematical Education in Science and Technology*. doi.org/10.1080/0020739X.2020.1821107

McCulloch, A.W., Leatham, K.R., Bailey, N.G.*, Cayton, C., Fye, K. *, & Lovett, J.N. (2021). Theoretically framing the pedagogy of learning to teach mathematics with technology. *Contemporary Issues in Technology and Teacher Education*, 21(2). <https://citejournal.org/volume-21/issue-2-21/mathematics/theoretically-framing-the-pedagogy-of-learning-to-teach-mathematics-with-technology>

McCulloch, A.W., Leatham, K.R., Lovett, J.N., Bailey, N.G.*, & Reed, S.* (2021). How we are preparing secondary mathematics teacher to teach with technology: Findings from a nationwide survey. *Journal for Research in Mathematics Education*, 52(1), 94-107. <https://doi.org/10.5951/jresmetheduc-2020-0205>

Baily, N.*, Reed, S.*, Fye, K.*, **McCulloch, A.W.**, & Lovett, J.N. (2020). #WODB: The power of dynamic representations. *Mathematics Teacher: Learning and Teaching PK-12*, 113(10), doi.org/10.5951/MTLT.2019.0395.

Dick, L., Lovett, J.N., **McCulloch, A.W.**, Edgington, C.E., & Casey, S. (2020). Predicting students' mathematical thinking in a technology-mediated environment. *Journal of Technology & Teacher Education*, 28(3), 89-112.

Lovett, J.N., **McCulloch, A.W.**, Dick, L. & Cayton, C. (2020). Design principles for examining student practices in a technology-mediated environment. *Mathematics Teacher Educator*, 8(3), 120-133. <https://doi.org/10.5951/MTE.2020.0007>

Lovett, J.N., Dick, L.K., **McCulloch, A.W.**, & Sherman, M.F. (2019). Preservice Mathematics Teachers' Professional Noticing of Students' Mathematical Thinking with Technology. *Journal of Computers in Mathematics and Science Teaching*, 38(4), 305-319. Waynesville, NC USA: Association for the Advancement of Computing in Education (AACE). Retrieved from <https://www.learntechlib.org/primary/p/183521/>.

McCulloch, A.W., Bailey, N.*, Fye, K.*, & Scott, G. (2020). Creating a third-space for learning to design technology-based math tasks. *Mathematics Teacher Educator*, 9(1), 7-11.

Lovett, J. N., **McCulloch, A. W.**, Patterson, B. A.*, & Martin, P. S.** (2020). Is this vending machine FUNCTIONing correctly? *Mathematics Teacher: Learning and Teaching PK – 12*. 113(2), pg 132 – 139.

McCulloch, A.W., Lovett, J.N., & Edgington, C. (2019). Transforming preservice teachers' understanding of function using a vending machine applet. *Contemporary Issues in Technology and Teacher Education* 19(1). Retrieved from <https://www.citejournal.org/volume-19/issue-1-19/mathematics/designing-to-provoke-disorienting-dilemmas-transforming-preservice-teachers-understanding-of-function-using-a-vending-machine-applet/>

McCulloch, A.W., Hollebrands, K.F., Lee, H.S., Harrison, T.*, & Mutlu, A.* (2018). Factors that influence secondary mathematics teachers' integration of technology in mathematics lessons. *Computers and Education*. 123, 26 – 40.

McCulloch, A.W., Whitehead, A.*, Lovett, J.N.*, & Whitley, K.B.* (2017). Tuning out the world with noise cancelling headphones. *Mathematics Teacher*. 110(8), 606 – 611.

McCulloch, A.W., Marshall, P.L., DeCuir-Gunby, J.T. & Caldwell, T.* (2013). Math autobiographies: A window into teachers' identities as mathematics learners. *School Science and Mathematics*, 113(8), 380 – 389.

McCulloch, A.W., Ernst, J.V., Limer, C.**, & Taormina, S.** (2013). STEM Inquiry on the Neuse River. *The Centroid*, 39(1), 6 – 10.

McCulloch, A.W., Kenney, R.H. & Keene, K.A. (2013). What to trust: Reconciling mathematical work done by hand with conflicting graphing calculator solutions. *School Science and Mathematics*, 113(4), 201 – 210.

- Marshall, P.L., DeCuir-Gunby, J.T., **McCulloch, A.W.** (2013). In search of professional dispositions that yield cultural relevance in primary grade pedagogy: A cautionary tale of one kindergarten teacher. *Journal of Praxis in Multicultural Education*, 7(1), 1 – 21.
- McCulloch, A.W.** & Ernst, J.V. (2012). Estuarine Ecosystems: Using T & E Signature Approaches to Support STEM Integration. *Technology and Engineering Teacher*. 72(3), 13 – 17.
- DeCuir-Gunby, J.T., Marshall, P.L. & **McCulloch, A.W.** (2012). Using mixed methods to analyze video data: A mathematics teacher professional development example. *Journal of Mixed Methods Research*, 6(3), 199 – 216.
- Marshall, P.L. & **McCulloch, A.W.** (2012). Un-bordering early mathematics pedagogy: Culture, content, and identity in critical professional development. *Boğaziçi University Journal of Education*, 27(1), 1-21.
- McCulloch, A.W.**, Kenney, R.H. & Keene, K.A. (2012). My answers don't match!: Using the graphing calculator to check. *Mathematics Teacher*, 105(6), 464 – 468.
- McCulloch, A.W.** & Marshall, P.L. (2011). K-2 teachers' attempts to connect out-of-school experiences to in-school mathematics learning. *The Journal of Urban Mathematics Education*, 4(2), 44-66.
- McCulloch, A.W.** (2011). Affect and graphing calculator use. *Journal of Mathematical Behavior*, 30, 166-179.
- DeCuir-Gunby, J.P., Marshall, P.L., & **McCulloch, A.W.** (2011). Developing and using a codebook for the analysis of interview data: An example from a professional development research project. *Field Methods*, 23(2), 136-155.
- McCulloch, A.W.**, Marshall, P.L., and DeCuir-Gunby, J.P. (2009) Revealing cultural capital in children's number representations. *Teaching Children Mathematics*, 16(3), 184-189. [Note: Special issue on equity with competitive acceptance rate.]
- McCulloch, A.W.** (2009). Insight into graphing calculator use: Methods for capturing activity and affect. *International Journal for Technology in Mathematics Education*, 16(2), 75-81.

BOOKS

- McCulloch, A.W.** & Lovett, J.N. (2024). *Exploring Math with Technology: Practices for Secondary Math Teachers*. Routledge.
- McCulloch, A.W.**, Lee, H.S., & Hollebrands, K. (2019). *Preparing to Teach Mathematics with Technology: An Integrated Approach to Algebra (2nd Edition)*. NC State University, Raleigh NC. Available at: <http://ptmt.fi.ncsu.edu>.

Marshall, P.L, DeCuir-Gunby, J.T., & **McCulloch, A.W.** (2015). *When critical multiculturalism meets mathematics: A mixed methods study of professional development and teacher identity*. NY: Rowman & Littlefield Publishers.

McCulloch, A.W., Lee, H.S., & Hollebrands, K. (2015). *Preparing to Teach Mathematics with Technology: An Integrated Approach to Algebra. (1st Edition)*. NC State University, Raleigh NC. Available at: <http://ptmt.fi.ncsu.edu>.

McCulloch, A.W. (2009). *Technology as Teddy Bear or Tool: Students' Perceptions of Graphing Calculator Use*. Saarbrücken, Germany: VDM Publishing House Ltd.

PEER-REVIEWED BOOK CHAPTERS

Note: *graduate student, **undergraduate student

Yalman Ozen, D.*, **McCulloch, A.W.**, Cayton, C., Fye, K.*, Fletcher, S.* (in press). Preservice secondary mathematics teachers' anticipations of student thinking on a technology-enhanced task. In T. Cherner & R. Blankenship (Eds.), *Research highlights in technology and teacher education 2024* (pp.XX-XX). Waynesville, NC: AACE - Association for the Advancement of Computing in Education.

Lovett, J.N., **McCulloch, A.W.**, Lee, H.S., Hollebrands, K.F., Cayton, C., & Dick, L.K. (2023). Preparing to teach mathematics with technology: Addressing problems of practice and theory. Book chapter for the forthcoming *AMTE Professional Book Series – Reflection on Past, Present, and Future: Paving the Way for the Future of Mathematics Teacher Education*.

Wilson, P.H., Baucom, L., Hare, E., Wonsavage, F.P., Duggan, A., Webb, J., Mawhinney, K., **McCulloch, A.W.**, Schwartz, K., & Stephan, M. (2021). Developing a statewide teacher learning community. In B. Faircloth & B.B. Chang (Eds.) *Resisting Barriers to Belonging: Conceptual Critique and Critical Applications* (p. 105-120). Lanham, MD: Lexington Books.

Lovett, J. N., Dick, L. K., **McCulloch, A. W.**, & Sherman, M. F. (2019). Preservice mathematics teachers' professional noticing of students' mathematical thinking with technology. In L. Liu, & D. Gibson (Eds.), *Research highlights in technology and teacher education 2018* (pp.71-79). Waynesville, NC: AACE - Association for the Advancement of Computing in Education. Retrieved from: <https://www.learntechlib.org/primary/p/207261/>.

Lovett, J.N., Dick, L.K., **McCulloch, A.W.**, Sherman, M.F., Edgington, C.P., Wanner, C.A.*, & Reed, S.D*., (2019). Eliciting preservice mathematics teachers technological pedagogical function knowledge. In M. Niess, H. Gillow-Wiles, & C. Angeli (Eds.) *Handbook of research on TPACK in the digital age*. (pp.365 – 389). Hershey, PA.: IGI Global.

Hollebrands, K.F., **McCulloch, A.W.**, & Lee, H.S. (2016). Prospective teachers' incorporation of technology in mathematics lesson plans. In Niess, M., Driskell, S., & Hollebrands, K. (Eds). *Handbook of Research on Transforming Mathematics Teacher Education in the Digital Age* (pp.272-292). Hearshey, PA.: IGI Global.

Marshall, P.L, **McCulloch, A.W.** & DeCuir-Gunby, J.P. (2010) Nurturing a Creative Curiosity for K-2 Mathematics Teaching: Lessons from the Dreamkeepers, In C.J. Craig and L.F. Deretchin (Eds.) *Teacher Education Yearbook XVIII: Cultivating Curious and Creative Minds: The Role of Teachers and Teacher Educators.* (pp.133-158). Lanham, Maryland: Rowman & Littlefield Publishing Group, Inc.

PEER-REVIEWED CONFERENCE PROCEEDINGS

*Note: *graduate student, **undergraduate student*

Holl-Cross, C.*, **McCulloch, A.W.**, Smallenberger, M. & Smallenberger, K. (under review). A college algebra instructor's transition from procedural to conceptual through the codesign of formative assessments. Proceedings of the *46th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, Cleveland, OH.

Hedgepeth, E.**, Holl-Cross, C.*, Smallenberger, M., Smallenberger, K., & **McCulloch, A.W.** (under review). Using ASSISTments for college math: Evaluating the effectiveness of supports and transferability of findings. Proceedings of the *46th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, Cleveland, OH.

McCulloch, A.W., Dick, L.K., Lovett, J.N., Bailey, N.G., Cayton, C., Wilson, J.*, & Muthitu, R.* (under review). Comparing constructions for assessing teachers' preparation to teach mathematics with technology. Proceedings of the *46th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, Cleveland, OH.

McCulloch, A.W., Dick, L.K, Bailey, N., Lovett, J.N., Wilson, J.*, & Muthitu, P.* (accepted). Prospective math teachers' vision of high-quality mathematics instruction with technology: A focus on role of the teacher. Proceedings of the *47th Annual Conference of the International Group for the Psychology of Mathematics Education*. XXX

McCulloch, A.W., Dick, L.K., Lovett, J.N., Wilson, J.*, Bailey, N.G., Muthitu, P.*. (accepted). The potential of instructional vision as a measure of TPACK. Proceedings of the *15th International Congress on Mathematics Education*. XXX

Cayton, C., Yalman Ozen, D.*, **McCulloch, A.W.**, Fye, K.*, Fletcher, S.*, Brown, A.* (accepted). Preservice teachers' anticipations on a technology-enhanced algebra task. Proceedings of the *15th International Congress on Mathematics Education*. XXX

Yalman Ozen, D.*, **McCulloch, A.W.**, Cayton, C., Fye, K.*, Fletcher, S.* (accepted). Preservice secondary mathematics teachers' anticipations of student thinking on a technology-enhanced task. Proceedings of the *35th Meeting of the Society for Information Technology and Teacher Education*. XXXX

Yalman Ozen, D.*, Cayton, C., **McCulloch, A.W.**, Fye, K.*, Muthitu, P.*, Fletcher, S.* & Bailey, N. (2024). Preservice secondary mathematics teachers' anticipations of student thinking on a technology-enhanced task. *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 187-196). New Las

- Vegas, N.V., United States: Association for the Advancement of Computing in Education (AACE). <https://www.learntechlib.org/primary/j/SITE/v/2024/n/1>
- Wilson, P.H., Henson, R., McCulloch, A., & Holl-Cross, C.* (2023). Investigating a survey measuring vision of high-quality mathematics instruction. *Proceedings of the 45th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, Reno, NV.
- Jin, Y., McVey, M., **McCulloch, A.**, Foulger, T., Schmidt-Crawford, D., Rice, M. & Burton, M. (2023). Modeling innovative technology use in teacher education and professional development. In E. Langran (Ed.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 1663–1665). New Orleans, LA, United States: Association for the Advancement of Computing in Education (AACE). <https://www.learntechlib.org/primary/p/222096/>
- McCulloch, A.W.**, Mawhinney, K., Holl-Cross, C.*, Wilson, P.H., & Wonsavage, P.F. (2022). Professional learning at scale: Designing a boundary object. In A.E. Lischka, E.B. Dyer, R.S. Jones, J. Lovett, J. Strayer, & S. Drown (Eds.) *Proceedings of the forty-fourth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Middle Tennessee State University, (pp. 961 – 969).
- Wilson, P.H., **McCulloch, A.W.**, Oriowo, O*., Holl-Cross, C.*, & Fisher, C.* (2022). Fostering systemic coherence through a shared vision of high quality mathematics instruction. In Bateiha, S. and Cobbs, G. (Eds.) *Proceedings of the 49th Annual Conference of the Research Council on Mathematics Learning*. (pp. 2-11).
- Fye, K.*, Bailey, N.G.*, **McCulloch, A.W.**, & Lovett, J.N. (2021). Preparing faculty to teach with technology: A focus on self-efficacy. In Olanoff, D., Johnson, K., & Spritzer, S. (Eds.) *Proceedings of the forty-third annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (pp. 1780-1781). Philadelphia, PA.
- Yalman Ozen, D.*, Bailey, N.G.*, Fletcher, S.*, Sanei, H.*, **McCulloch, A.W.**, Lovett, J.N., & Cayton, C. (2021). Preservice secondary teachers' reasoning about static and dynamic representations of function. In Olanoff, D., Johnson, K., & Spritzer, S. (Eds.) *Proceedings of the forty-third annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (pp. 1639-1648). Philadelphia, PA.
- Bailey, N. G.*, Yalman Ozen, D.*, **McCulloch, A. W.**, Dick, L., Lovett, J. N., & Cayton, C. (2021). AMTE's 2021 NTLI Fellowship: Using a framework to teach preservice mathematics teachers how to professionally notice within technology-mediated learning environments. In E. Langran & L. Archambault (Eds.), *Proceedings of the 32nd annual conference of the Society for Information Technology and Teacher Education* (pp. 1359-1368). Association for the Advancement of Computing in Education.
- Meagher, M., Lovett, J.N., & **McCulloch, A.W.** (2020). Middle school students' development of an understanding of the concept of function. In A.I. Sacristan, J.C. Cortes-Zavala, &

- R.M. Ruiz-Arias (Eds.), *Proceedings of the forty-second annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (pp. 2183 - 2191). Mazatlán, Mexico.
- McCulloch, A.W.**, Lovett, J.N., Leatham, K., Bailey, N.*, & Reed, S.* (2019). Preparing secondary mathematics teachers to teach with technology: Findings from a nationwide survey. In S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter (Eds.), *Proceedings of the forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (pp.1126-1130). St. Louis, MO: University of Missouri.
- Bailey, N.*, **McCulloch, A.W.** (2019). Online discussion boards as a vehicle for eliciting undergraduates' critical statistical literacy. In S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter (Eds.), *Proceedings of the forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (pp.X). St. Louis, MO: University of Missouri.
- Meagher, M., **McCulloch, A.W.**, Lovett, J.N., & Sherman, M. (2019). A transformative learning experience for the concept of function. In S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter (Eds.), *Proceedings of the forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (pp.1029-1038). St. Louis, MO: University of Missouri.
- Sherman, M., Meagher, M., **McCulloch, A.W.**, & Lovett, J.N. (2019). Transforming pre-service teachers' definition of function. In S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter (Eds.), *Proceedings of the forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (pp. 1039-1047). St. Louis, MO: University of Missouri.
- Watson, L.*, Lovett, J.N., **McCulloch, A.W.**, Cayton, C., & Dick, L. (2019). Preservice teachers' approximations of practice: Planning for and practicing whole class discussions. In S. Otten, A. G. Candela, Z. de Araujo, C. Haines, & C. Munter (Eds.), *Proceedings of the forty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (pp.1372-1373). St. Louis, MO: University of Missouri.
- Wonsavage, F.P.*, Wilson, P.H., & **McCulloch, A.W.** (2019). Designing for organizational sensemaking of mathematics standards at scale. In A. Redmond-Sanogo and J. Cribbs (Eds.) *Proceedings of the 46th Annual Conference of the Research Council on Mathematics Learning*. (pp. 181-188). Charlotte, NC.
- Bailey, N.*, Quinn, C.*, Reed, S.*, Wanner, S.C.A.*, **McCulloch, A.W.**, Lovett, J.N., & Sherman, M. (2019). Calculus II Students' Understanding of the Univalence Requirement of Function. In A. Weinberg, D. Moore-Russo, H. Soto, & M. Wawro (Eds.), *Proceedings of the 22nd Annual Conference on Research in Undergraduate Mathematics Education*. (pp. 18-26). Oklahoma City, OK: The Special Interest Group of the Mathematical Association of America (SIGMAA) for Research in Undergraduate Mathematics Education.

- McCulloch, A.W.**, Lovett, J. N., Dick, L. K., Cayton, C., & Lee, H. S. (2018). Design principles for the development of professional noticing of students' technological mathematical practices. In (Eds.) T.E. Hodges, G.J. Roy, & A.M. Tyminski. *Proceedings of the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1195 – 1203). Greenville, SC: University of South Carolina & Clemson University.
- Reed, S. D.*, Wanner, C. A.*, Bailey, N.*, Quinn, C.*, Lovett, J. N., **McCulloch, A. W.**, & Sherman, M. F. (2018). Calculus II students' definitions of function: Attention to correspondence. In T. E. Hodges, G. J. Roy, & A. M. Tyminski (Eds.), *Proceedings of the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1284). Greenville, SC: University of South Carolina & Clemson University.
- Wonsavage, F.P.*, **McCulloch, A.W.**, & Reaper, J. (2018). Designing online professional development through the lens of organizational sensemaking. In Hodges, T.E., Roy, G.J., & Tyminski, A.M. *Proceedings of the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 457). Greenville, SC: University of South Carolina & Clemson University.
- Lovett, J. N., Dick, L. K., **McCulloch, A.W.**, Sherman, M. F., & Martin, K.* (2018). Preservice mathematics teachers' professional noticing of students' mathematical thinking with technology. In E. Langran & J. Borup (Eds.), *Proceedings of Society for Information Technology & Teacher Education International Conference* (pp. 1802-1811). Washington, D.C., United States: Association for the Advancement of Computing in Education (AACE). Retrieved from <https://www.learntechlib.org/primary/p/182772/>.
- Sherman, M., Lovett, J.N., **McCulloch, A.W.**, Edgington, C.E., Dick, L.K., & Casey, S. (2018). Transforming students' definitions of function using a vending machine applet. In A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, & S. Brown (Eds.), *Proceedings of the 21st Annual Conference on Research in Undergraduate Mathematics Education* (pp. 752-760). San Diego, CA: The Special Interest Group of the Mathematical Association of America (SIGMAA) for Research in Undergraduate Mathematics Education.
- Wilson, P.H., **McCulloch, A.W.**, Curtis, J., Mawhinney, K., Stephan, M., & Webb, J. (2017). Partnering for professional development at scale. *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1431 - 1434). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.
- McCulloch, A.W.**, Wilson, P.H., Curtis, J., Webb, J., & Wonsavage, F.P.* (2017). Creating spaces for statewide teacher collaboration: Emerging practices in virtual sessions designed to support teachers in the implementation of new standards. *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 463 – 466). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.
- McCulloch, A.W.**, Lovett, J. N., & Edgington, C. (2017). Developing preservice teachers' understanding of function using a vending machine metaphor applet. In E. Galindo & J.

- Newton (Eds.), *Proceedings of the 39th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1281-1288). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.
- Cetner, M.* & **McCulloch, A.W.** (2016). The influence of interdisciplinary co-planning teams on beliefs of secondary mathematics and science teachers. In M.J. Mohr – Schroeder & J.N. Thomas (Eds.), *Proceedings of the 115th Annual Convention of School Science and Mathematics Association* (pp. 60 – 68). Oklahoma City, OK: SSMA.
- Lovett, J.N. & **McCulloch, A.W.** (2016). Preservice teachers' development of an understanding of function using different metaphors. In E. Turner & M. Wood (Eds.) *Proceedings for the Thirty-Eighth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (pp.949). East Lansing, MI: Michigan State University.
- Cetner, M.B.* & **McCulloch, A.W.** (2016). Implementation of an interdisciplinary co-planning team model among secondary mathematics and science teachers. In E. Turner & M. Wood *Proceedings for the Thirty-Eighth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (pp. 1402). East Lansing, MI: Michigan State University.
- Hollebrands, K.F., **McCulloch, A.W.**, & Chandler, K.* (2015). Students' reasoning about technology-based geometric functions. In T. Bartell & K. Bieda (Eds.) *Proceedings for the Thirty-Seventh Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (pp. 1252). East Lansing, MI: Michigan State University.
- McCulloch, A.W.** & Ernst, J.V. (2012). Intentionally integrating STEM: A proposed framework. In L.R. VanZoest, J. Lo, & J.L. Kratky (Eds.), *Proceedings of the 34th Annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (pp. 104-107). Kalamazoo, MI.
- McCulloch, A.W.**, Kenney, R.H., & Keene, K.A. (2011). Deciding what to trust: Conflict resolution when checking with a graphing calculator. In L. R. Wiest & T. Lamberg (Eds.) *Proceedings of the 33rd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. (pp. 1822). Reno, NV.
- McCulloch, A.W.** & Keene, K.A. (2011). Technology tools in high school mathematics: promotion, perceptions and use. In L. R. Wiest & T. Lamberg (Eds.) *Proceedings of the 33rd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Reno, NV: University of Nevada, Reno.
- McCulloch, A.W.**, Campbell, M.P.* , & Hedges, J.P.* (2009). Promoting effective graphing calculator use: Revealing unintentional privileging, *Proceedings of the 31st Annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (pp. 894 – 902). Atlanta, GA.

- McCulloch, A.W.** & Smith, R.C.* (2009) The Nature of Students' Collaboration in the Creation of a Wiki, *Proceedings from the Annual Conference of the Society for Information Technology and Teacher Education*, Charleston, SC.
- McCulloch, A.W.** (2009). Mathematicians, Mathematics Educators and High School Mathematics Teachers Interpretations and Judgments Regarding Calculus Students' Problem Solving Methods. In M. Zandieh (Ed.), *Electronic Proceedings for the Twelfth Special Interest Group of the Mathematical Association on Research in Undergraduate Mathematics*, Raleigh, NC.
- McCulloch, A.W.** (2008). Calculus students' perceptions of graphing calculators and play: Am I doing math? In S. Hauk (Ed.), *Electronic Proceedings for the Eleventh Special Interest Group of the Mathematical Association on Research in Undergraduate Mathematics*, San Diego, CA.
- Alston, A., Goldin, G.A., Jones, J., **McCulloch, A.W.**, Rossman, C. (2007). The complexity of affect in an urban mathematics classroom. In Lamberg, T., & Wiest, L.R. (Eds.), *Proceedings of the 29th Annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*.(pp. 326 – 333). Lake Tahoe, NV.
- McCulloch, A.W.** (2007). Insight into graphing calculator use: Methods for capturing the student's voice. *Proceedings of the 8th International Conference on Technology in Mathematics Teaching*, Hradec Králové, Czech Republic.
- McCulloch, A.W.** (2005). Building an understanding of students' use of graphing calculators: A case study. In Lloyd, G.M., Wilson, M., Wilkins, J.L.M., & Behm, S.L. (Eds.), *Proceedings of the twenty-seventh annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Roanoke, VA.

NON-REVIEWED PUBLICATIONS

- NC2ML (2023). Discourse moves for fostering confident math learners – We all speak math: Project Overview. <https://www.nc2ml.org/wp-content/uploads/2023/08/Discourse-Overarching-Document-8.28.23.pdf>
- NC²ML (2021). Reasoning with Multiple Representations. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- Hollebrands, K., **McCulloch, A.**, Scher, D., & Steketee, S. (2020). A Geometric Approach to Functions, *American Mathematical Society: Blogs on Teaching and Learning Mathematics*. Retrieved from <https://blogs.ams.org/matheducation/2020/06/15/a-geometric-approach-to-functions/>
- NC²ML (2017). Developing a Vision for High-Quality Math Instruction. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). The Role of Mathematical Tasks. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.

- NC²ML (2017). Launching a Task: Providing Opportunities for All Students to Learn – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). Supporting Students Thinking Through Questioning. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). Strategic Use of Tools and Technology. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM1.1 Equations & Introduction to Functions. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM1.2 Linear Functions Algebra. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM1.3 Exponential Functions. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM1.4 Quadratic Functions. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM1.5 Systems of Equations and Inequalities . Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM1.6 Statistics. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM2.1 Transformations. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM2.2 Similarity & Congruence. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM2.3 Quadratics. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM2.4 Square Root & Inverse Variation Functions. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM2.5 Trigonometry (Solving Right Triangles). Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM2.6 Probability. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM3.1 Functions and Their Inverses. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM3.2 Exponential and Logarithmic Functions. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.

- NC²ML (2017). NCM3.3 Polynomial Functions. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM3.4 Modeling with Geometry. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM3.5 Reasoning with Geometry. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM3.6 Rational Functions. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM3.7 Trigonometric Functions. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.
- NC²ML (2017). NCM3.8 Statistics. Research – Practice Briefs. North Carolina Collaborative for Mathematics Learning. Greensboro, NC. Retrieved from <http://nc2ml.org>.

INVITED PRESENTATIONS

Note: *graduate student, **undergraduate student

- Wilson, P.H. & McCulloch, A.W. (November 2023) Leading boldly: Leveraging discourse moves to make math classrooms more equitable and engaging. North Carolina Council of Teachers of Mathematics Leadership Seminar. Winston Salem, NC.
- Wilson, P.H. & McCulloch, A.W. (August 2023) Discourse moves: Tools for improving student engagement, math identity, and achievement. *2023 Math Summit*, NC State.
- Mawhinney, K. & **McCulloch, A.W.** (April 2023). Updates on the NC²ML Visions Project: Co-designing to address shared problems of practice. *North Carolina Department of Public Instruction Office Hours Webinar*.
- McCulloch, A.W.**, Lovett, J.N., & Cayton, C. (October 2021). Positioning ALL Students as Mathematics Explorers with Technology Tools. *Mathematics Teacher: Teaching and Learning PK-12 Webinar Digital Equity and the Digital Divide*, NCTM.
- McCulloch, A.W.**, & Wilson, P.H. (August 2021). Positioning Students as Mathematics Explorers with Technology. *2021 Math Summit*, NC State.
- Bailey, N.*, Ozen, D.Y.*, **McCulloch, A.W.**, Dick, L.K., Lovett, J.N., & Cayton, C. (March 2021). Using a framework to teach preservice mathematics teachers how to professionally notice within technology mediated environments. Invited featured research paper presented at the annual international conference of the Society for Information Technology and Teacher Education. Paper presented based on the 2021 National Technology Leadership Initiative Fellowship Award.

- McCulloch, A.W.** (2021). Discussing creating a third-space for learning to design technology-based math tasks. Invited presentation for Episode 25 of the *Mathematics Teacher Educator Podcast*. <https://mtepodcast.amte.net/page/2>
- McCulloch, A.W.** (October 2020). *Preparing teachers to teach mathematics with technology: Responding to a nationwide survey*. Invited presentation for the Appalachian State University Department of Mathematical Sciences Colloquium Series.
- McCulloch, A.W.** & Lovett, J.N. (September 2020). Design principles for examining student practices in a technology-mediated environment. Invited presentation for the *Wisconsin affiliate of the Association of Mathematics Teacher Educators*.
- McCulloch, A.W.** (August 2020). *Facilitating Mathematics Interactions in Online Settings*. Invited presentation for the North Carolina Council of Teachers of Mathematics 50th Anniversary Virtual Conference.
- Lovett, J.N., **McCulloch, A.W.**, Dick, L. & Cayton, C. (August 2020). Discussing design principles for examining student practices in a technology-mediated environment. Invited presentation for Episode 18 of the *Mathematics Teacher Educator Podcast*.
- McCulloch, A.W.** & Lovett, J.N. (September 2018). *Designing for Dilemmas: Understanding the Concept of Function*. Invited presentation for the Bucknell University Distinguished Visiting Professor program.
- Lovett, J. N., Dick, L. K., **McCulloch, A. W.**, & Sherman, M. F. (April 2018). *Examining student practices on technological tasks through a lesson of professional noticing*. Invited webinar presentation for the Association of Mathematics Teacher Educators.
- Lovett, J. N., Dick, L. K., **McCulloch, A. W.**, Sherman, M. F., & Martin, K.* (March 2018). *Preservice mathematics teachers' professional noticing of students' mathematical thinking with technology*. Invited featured research paper presented at the annual international conference of the Society for Information Technology and Teacher Education, Washington, D.C. Paper presented was based on the National Technology Leadership Initiative Fellowship Award.
- Ashe, L., Wilson, P.H., **McCulloch, A.W.**, Mawhinney, K., Schwartz, K., Stephan, M., & Webb, J. (2017). *NC Department of Public Instruction and the North Carolina Collaborative for Mathematics Learning*. Invited presentation for the Annual Meeting of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.
- Webb, J., **McCulloch, A.W.**, Wonsavage, F.P.*, and Bryant, E.* (2017). *Fostering a Collaborative Statewide Math Community*. Invited presentation for the Annual Meeting of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.
- Wilson, P.H., Curtis, J., **McCulloch, A.W.**, Webb, J. (March, 2017). *Working Together: Supporting the Implementation of Mathematics Standards Through Collaborative Design*. Invited presentation for the North Carolina Council of Teachers of Mathematics Spring Leadership Conference, Greensboro, NC

- Wilson, P.H., **McCulloch, A.W.**, Stephan, M., Webb, J., Curtis, J., Mawhinney, K., & Hewitt, K. (2017). Supporting a State-Level Implementation of Mathematics Standards Through Collaborative Design. Invited presentation for the National Council of Teachers of Mathematics Research Conference, San Antonio, TX.
- McCulloch, A.W.** (2016). *Teachers Matter!* Invited talk presented to the NC State Park Scholars Freshman Seminar. Raleigh, NC.
- McCulloch, A.W.** (2016). *Preparing teacher to plan and implement technology-based tasks in secondary mathematics.* Invited talk presented to the Purdue University Graduate Program in Mathematics Education. West Lafayette, IN.
- McCulloch, A.W.** (2015). *Mathematics Education in North Carolina Today.* Invited talk presented to the NC State Park Scholars Freshman Seminar. Raleigh, NC.
- McCulloch, A.W.** (2013). *Building an understanding of trigonometric functions as actions, processes, and objects.* Invited talk presented to the Purdue University Graduate Program in Mathematics Education, West Lafayette, IN.
- McCulloch, A.W.** (2011). *Panel on developing student – faculty relationships.* Invited panelist for the Association of African-American Student Educators – NC State Chapter, Raleigh, NC.
- McCulloch, A.W.** (2011). *Introduction to the Common Core State Standards for Mathematics.* Invited presenter for the North Carolina Council of Teachers of Mathematics – Kappa Chapter, Raleigh, NC.
- McCulloch, A.W.** (2010). *Modeling in algebra.* Invited presenter for the North Carolina Council of Teachers of Mathematics – Kappa Chapter, Raleigh, NC.
- McCulloch, A.W.** (2008). *Mathematical needs for students in the 21st Century.* Invited panelist for the North Carolina Integrated Math Workshop, Raleigh, NC.
- McCulloch, A.W.** (2008). *Synthesis and commentary of papers presented within the U.S. – Sino Workshop Technology Group.* Invited participant and presenter for the U.S. – Sino – Workshop on Mathematics and Science Education, Murfreesboro, TN.
- Marshall, P.L., DeCuir-Gunby, J.T. & **McCulloch, A.W.** (2008). *The Nurturing Mathematics Dreamkeepers Project.* Presented as part of the Friday Institute Brown Bag Seminar Series, Raleigh, NC.
- McCulloch, A.W.** (2006). *Teddy bear or tool: Initial results from a study on graphing calculator use.* Invited presentation to the Department of Mathematics Education, Umeå University, Umeå, Sweden.
- McCulloch, A.W.** (2005). *Functions online: Using technology to investigate functions from algebra through precalculus.* Invited presentation at the Annual Conference of the Precalculus Project of the Rutgers University Center for Mathematics, Science and Computer Education, New Brunswick, NJ.

PEER-REVIEWED INTERNATIONAL / NATIONAL PRESENTATIONS

Note: *graduate student, **undergraduate student

- Yalman Ozen, D.*, Cayton, C., **McCulloch, A.W.**, Fye, K.*, Muthitu, P.*, Fletcher, S.* & Bailey, N. (2024). Preservice secondary mathematics teachers' anticipations of student thinking on a technology-enhanced task. Presented at the *2024 Annual Society for Information Technology and Teacher Education (SITE) Conference*. Las Vegas, N.V. <https://www.learntechlib.org/primary/j/SITE/v/2024/n/1>
- McCulloch, A.W.** & Lovett, J.N. (2024). Learning from technology using secondary math teachers. *The 28th Annual Meeting of the Association of Mathematics Teacher Educators*, Orlando, FL.
- Adefope, O., Wilson, P.H., **McCulloch, A.W.**, & Fisher, C.* (2024). Mathematics instructional leaders' visions of equitable instruction. *The 28th Annual Meeting of the Association of Mathematics Teacher Educators*, Orlando, FL.
- McCulloch, A.W.**, Lovett, J.N., & Dick, L. (2023). How do I get started? Using dynamic mathematics technology to position your students as mathematics explorers. To be presented at the *2023 National Council of Teachers of Mathematics Annual Meeting & Exposition*. Washington D.C.
- Dick, L., **McCulloch, A.W.**, and Fye, K.* (2023). Using the Desmos teacher dashboard to elicit and make use of student thinking. Presented at the *2023 National Council of Teachers of Mathematics Annual Meeting & Exposition*. Washington D.C.
- Jin, Y., McVey, M., **McCulloch, A.**, Foulger, T., Schmidt-Crawford, D., Rice, M. & Burton, M. (2023). Modeling innovative technology use in teacher education and professional development. Symposia presented at the 2023 Annual Society for Information Technology and Teacher Education (SITE) Conference. New Orleans, LA. <https://www.learntechlib.org/primary/p/222096/>
- Bailey, N.G.* & **McCulloch, A.W.** (2023). Supporting preservice secondary mathematics teachers' development and rehearsal of data talks. *The 27th Annual Meeting of the Association of Mathematics Teacher Educators*, New Orleans, LA.
- Lovett, J.N., **McCulloch, A.W.**, Cayton, C., Dick, L., Yalman Ozen, D.*, Fletcher, S.*, Bailey, N.G.*, Muthitu, P.*, & Brown, A.* (2023). Incorporating video cases into secondary methods, content, and technology courses. *The 27th Annual Meeting of the Association of Mathematics Teacher Educators*, New Orleans, LA.
- Meyer, D., **McCulloch, A.W.**, & Lovett, J. (2023). Approximating the "Five Practices" using Desmos technology. *The 27th Annual Meeting of the Association of Mathematics Teacher Educators*, New Orleans, LA.
- Stephan, M., Fisher, C.*, Holl-Cross, C*., **McCulloch, A.W.**, Oriowo, L.*, Schwartz, C., & Wilson, P.H. (2023). Challenges for research-practice partnerships: Identifying problems

of practice in K-12 education. *The 27th Annual Meeting of the Association of Mathematics Teacher Educators*, New Orleans, LA.

McCulloch, A.W., Mawhinney, K., Holl-Cross, C.*, Wilson, P.H., & Wonsavage, P.F. (2022). Professional learning at scale: Designing a boundary object. Presented at the *forty-fourth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, Nashville, TN.

Mawhinney, K., Schwartz, C., Wilson, P.H., Stephan, M., **McCulloch, A.W.**, Adefope, O., Fisher, C.*, Holl-Cross, C.*, Oriowo, O.* (2022). Co-designing for statewide alignment of a vision for high quality mathematics instruction. Poster presented at the *forty-fourth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, Nashville, TN.

Wilson, P., **McCulloch, A.W.**, Fisher, C., Holl-Cross, C., & Oriowo, O. (2022). Systemic coherence through a shared vision of mathematics instruction. Presented at the *Annual Meeting of the Research Council on Mathematics Learning*, Grapevine, TX. March 2022.

Lovett, J.N., **McCulloch, A.W.**, Cayton, C., Lee, H.S., Bailey, N.G.*, Yalman Ozen, D.*, Fletcher, S.* (2022). Leveraging the five practices and teacher noticing in preparing secondary teachers to teach mathematics with technology. Presented at the *2022 Annual Meeting of the Association of Mathematics Teacher Educators*, Henderson, NV.

McCulloch, A.W., Meyer, D., & Lovett, J.N. (2022). Designing Approximations of Practice for Learning to Teach with Technology. Presented at the *2022 Annual Meeting of the Association of Mathematics Teacher Educators*, Henderson, NV.

Hollebrands, K. & **McCulloch, A.W.** (April 2021). Using dynamic geometry and dance to make connections between functions and geometric transformations. *National Council of Teachers of Mathematics Virtual 2021 Annual Meeting*.

McCulloch, A.W., Lovett, J.N., Dick, L.K., Cayton, C., Lee, Hollylynn, Bailey, N.*, Yalman Ozen, D.*, Sanei, H.*, Reed, S.* (February 2021). Learning to teach mathematics with technology through engaging with video artifacts of secondary students' work. Presented at the *2021 Annual Meeting of the Association of Mathematics Teacher Educators*.

Bailey, N.*, Yalman Ozen, D.*, **McCulloch, A.W.**, Dick, L.K., Lovett, J.N., & Cayton, C. (February 2021). Using a framework to teach preservice mathematics teachers how to professionally notice within technology mediated environments. Presented at the *2021 Annual Meeting of the Association of Mathematics Teacher Educators*.

Meagher, M., Lovett, J.N., & **McCulloch, A.W.** (November 2020 → postponed to June 2021). Middle school students' development of an understanding of the concept of function. To be presented at the *forty-second annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, Mazatlán, Mexico.

Bailey, N.*, **McCulloch, A. W.**, Leatham, K. R., Lovett, J. N., Cayton, C., Reed, S.*, & Fye, K.* (February 2020). Theoretically framing the pedagogy of learning to teach

- mathematics with technology. Presented at the *2020 Annual Meeting of the Association of Mathematics Teacher Educators*. Phoenix, AZ.
- McCulloch, A. W.**, Leatham, K. R., Lovett, J. N., Bailey, N.* , & Reed, S.* (February 2020). Addressing the SPMTs: Critical conversations about preparing mathematics teachers to utilize technology in their instruction. Presented at the *2020 Annual Meeting of the Association of Mathematics Teacher Educators*. Phoenix, AZ.
- McCulloch, A.W.**, Lovett, J.N., & Dick, L. (2019). Is this vending machine FUNCTIONing correctly? Presented at *National Council of Teachers of Mathematics Regional Conference*. Nashville, TN.
- McCulloch, A.W.**, Lovett, J.N., Leatham. K., Bailey, N.* , & Reed, S.* (2019). Preparing Secondary Mathematics Teachers to Teach with Technology: Findings from a Nationwide Survey. Paper to be presented at the *41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. St. Louis, MO.
- Bailey, N.* , **McCulloch, A.W.** (2019). Online Discussion Boards as a Vehicle for Eliciting Undergraduates' Critical Statistical Literacy. Paper to be presented at the *41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. St. Louis, MO.
- Meagher, M., **McCulloch, A.W.**, Lovett, J.N., & Sherman, M. (2019). A Transformative Learning Experience for the Concept of Function. Paper to be presented at the *41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. St. Louis, MO.
- Sherman, M., Meagher, M., **McCulloch, A.W.**, & Lovett, J.N. (2019). Transforming Pre-Service Teachers Definition of Function. Paper to be presented at the *41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. St. Louis, MO.
- Watson, L., Lovett, J.N., **McCulloch, A.W.**, Dick, L., & Cayton, C. (2019). Preservice teachers' approximations of practice: Planning for and practicing whole class discussions. Poster Paper to be presented at the *41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. St. Louis, MO.
- Dick, L., Lovett, J.N., & **McCulloch, A.W.** (2019). Is this Vending Machine FUNCTIONing Correctly? Presented at the *2019 National Council of Teachers of Mathematics Annual Meeting*. San Diego, CA.
- Wonsavage, F.P.* , Wilson, P.H., & **McCulloch, A.W.** (2019). Designing for organizational sensemaking of mathematics standards at scale. Paper to be presented at the *46th Annual Conference of the Research Council on Mathematics Learning*, Charlotte, NC.
- Bailey, N.* , Quinn, C.* , Reed, S.* , Wanner, S.C.A*., **McCulloch, A.W.**, Lovett, J.N., & Sherman, M. (2019). Calculus II Students' Understanding of the Univalence Requirement of Function. To be presented at *the 22nd Annual Conference on Research in*

Undergraduate Mathematics Education. Oklahoma City, OK: The Special Interest Group of the Mathematical Association of America (SIGMAA) for Research in Undergraduate Mathematics Education.

- McCulloch, A.W.**, Bailey, N.*, Fye, K., & Scott, G. (2019). University and school-based partners supporting future teachers' learning to design technology-based mathematics tasks. To be presented at *The 2019 Annual Meeting of the Association of Mathematics Teacher Educators*. Orlando, FL.
- Lovett, J.N., **McCulloch, A.W.**, Cayton, C., Dick, L., & Bailey, N.* (2019). Modules for examining students' mathematical practices on technological tasks. To be presented at *The 2019 Annual Meeting of the Association of Mathematics Teacher Educators*. Orlando, FL.
- McCulloch, A. W.**, Lovett, J. N., Dick, L. K., Cayton, C., & Lee, H. S. (November 2018). Design principles for the development of professional noticing of students' technological mathematical practices. Paper presented at the *40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, Greenville, SC.
- Reed, S. D.*, Wanner, C. A.*, Bailey, N.*, Quinn, C.*, Lovett, J. N., **McCulloch, A.W.**, & Sherman, M. F. (November 2018). Calculus II students' definitions of function: Attention to correspondence. Poster presented at the *40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, Greenville, SC.
- Wonsavage, F.P.*, **McCulloch, A.W.**, & Reaper, J. (November 2018). Designing online professional development through the lens of organizational sensemaking. Poster to be presented at the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Greenville, SC.
- McCulloch, A.W.**, Hollebrands, K.F., Lee, H.S., Harrison, T.*, & Mutlu, A.* (2018). Factors that influence high school teachers' uses of technology, National Council of Teachers of Mathematics Research Conference, Washington, D.C.
- Sherman, M., Lovett, J.N., **McCulloch, A.W.**, Dick, L., Edgington, C.E., & Casey, S.A. (2018). Transforming students' definitions of function using a vending machine applet, 21st Annual Conference for Research in Undergraduate Mathematics Education, San Diego, CA.
- McCulloch, A.W.**, Hollebrands, K.F., Lee, H.S., Harrison, T.*, & Mutlu, A.* (2018). Early career mathematics teachers' uses of technology. The 2018 Annual Meeting of the Association of Mathematics Teacher Educators. Houston, TX.
- Lovett, J.N., Dick, L., **McCulloch, A.W.**, Sherman, M., & Martin, K.* (2018). Developing preservice teachers' TPACK of function using a vending machine metaphor applet. The 2018 Annual Meeting of the Association of Mathematics Teacher Educators. Houston, TX.

- McCulloch, A.W.**, Stephan, M., Webb, J., & Wilson, P.H. (2018). Co-designing statewide efforts to improve mathematics education through partnerships. Presented at the 2018 Annual Meeting of the Association of Mathematics Teacher Educators. Houston, TX.
- Wilson, P.H, **McCulloch, A.W.**, Curtis, J., Mawhinney, K., Stephan, M., & Webb, J. (2017). Partnering for professional development at scale. Presented at the Thirty-Ninth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Indianapolis, IN.
- McCulloch, A.W.**, Wilson, P.H., Curtis, J., Wonsavage, F.P.* (2017). Creating spaces for statewide teacher collaboration: Emerging practices in virtual sessions designed to support teachers in the implementation of new standards. Presented at the Thirty-Ninth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Indianapolis, IN.
- McCulloch, A.W.**, Lovett, J.N, & Edgington, C.P. (2017). Developing Preservice Teachers' Understanding of Function Using a Vending Machine Applet. Presented at the Thirty-Ninth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Indianapolis, IN.
- McCulloch, A.W.**, Lovett, J.N., & Edgington, C. (2017). *Developing preservice teachers understanding of function using a machine metaphor applet*. To be presented at the Association of Mathematics Teacher Educators, Orlando, FL.
- Cetner, M.B.* & **McCulloch, A.W.** (2016). *Implementation of an interdisciplinary co-planning team model among secondary mathematics and science teachers*. Presented at the Thirty-Eighth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Tucson, AZ.
- Lovett, J.N. & **McCulloch, A.W.** (2016). *Preservice teachers' development of an understanding of function using different metaphors*. Presented at the Thirty-Eighth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Tucson, AZ.
- Cetner, M.* & **McCulloch, A.W.** (2016). *Implementation of interdisciplinary co-planning teams among secondary mathematics teaches*. Presented at School Science and Mathematics Association Annual Convention, Pheonix, AZ.
- McCulloch, A.W.** (2016). *Preparing to teach mathematics with technology: Expanding, transforming, and building capacity (PTMT-ETC)*. Presented at the Envisioning the Future of Undergraduate STEM Education (EnFUSE): Research and Practice. Washington, D.C.
- Hollebrands, K.F. & **McCulloch, A.W.** (2016). *Connecting transformations and functions with technology*. Session presented at the annual meeting of the Association of Mathematics Teacher Educators, Irvine, CA.
- McCulloch, A.W.**, Lee, H.S., Hollebrands, K.F., Chandler, K.*, & Lovett, J.N.* (2016). *Preparing teacher to plan and implement technology-based algebra tasks using open*

- access tools*. Session presented at the annual meeting of the Association of Mathematics Teacher Educators, Irvine, CA.
- Hollebrands, K.F, **McCulloch, A.W.**, & Chandler, K.* (2015). *High school students' uses of dragging for examining geometric representations of functions*. Presented at the Thirty-Seventh Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, East Lansing, MI.
- Whitely, B.*, Nickell, J.*, Whitehead, A.*, & **McCulloch, A.W.** (2015). *Modeling noise canceling headphones with trigonometric functions*. Session presented at the annual meeting of the National Council of Teachers of Mathematics, Boston, MA.
- Cayton, C., Sherman, M., **McCulloch, A.W.**, Nickel, J.*, & Chandler, K.* (2014). *Technological tasks and cognitive demand in secondary classrooms and teacher education*. Session presented at the National Council of Teachers of Mathematics Research Conference, New Orleans, LA.
- Hollebrands, K.F., Steketee, S., **McCulloch, A.W.**, Lee, H.S., & Whitley, K.B.* (2013). *High school student's thinking about technology-based geometry functions*. Research Pre-session of the National Council of Teachers of Mathematics, Denver, CO.
- Hollebrands, K.F., Lee, H.S., **McCulloch, A.W.** & Technology Committee Members (2013). *Technology-based tasks in mathematics teacher education*. Presented at the Annual Meeting of the Association of Mathematics Teacher Educators, Orlando, FL.
- McCulloch, A.W.** & Ernst, J.V. (2012). Intentionally integrating STEM: A proposed framework. The 34th annual meeting of the *North American Chapter of the International Group for the Psychology of Mathematics Education*. Kalamazoo, MI.
- Krupa, E.A., Confrey, J., & **McCulloch, A.W.** (2012). *Effects of professional development on student achievement and on teachers' curricular implementation*. National Council of Teachers of Mathematics 2012 Research Pre-session. Philadelphia, PA.
- McCulloch, A.W.**, Kenney, R.H., & Keene, K.A. (2011). *Deciding what to trust: Conflict resolution when checking with a graphing calculator*. Presented at the 33rd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Reno, NV.
- McCulloch, A.W.** & Keene, K.A. (2011). *Technology tools in high school mathematics: Promotion, perceptions and Use*. Presented at the 33rd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Reno, NV.
- McCulloch, A.W.** & Kenney, R.H. (2011). *My answers don't match: Using the graphing calculator to check*. Presented at the 2011 Annual Meeting of the National Council of Teachers of Mathematics, Indianapolis, IN.

- Marshall, P.L. & **McCulloch, A.W.** (2010). *Un-bordering early mathematics pedagogy: Culture, content, and identity in critical professional development*. Paper presented at the 2010 Annual Conference of the Comparative Education Society, Istanbul, Turkey.
- McCulloch, A.W.** & Marshall, P.L. (2010). *K-2 teachers' attempts to connect out-of-school experiences to in-school mathematics learning*. Paper presented at the 2010 Annual Conference of the Comparative Education Society, Istanbul, Turkey.
- Marshall, P.L., **McCulloch, A.W.**, & DeCuir-Gunby, J.P. (2010). *Professional Dispositions, Cultural Relevance, and Early Mathematics Instruction: Case Study of a Primary Level Teacher*. Presented at 2010 Annual Meeting of the American Educational Research Association, Denver, CO.
- DeCuir-Gunby, J.P., Marshall, P.L., & **McCulloch, A.W.** (2010). *Video Analysis as a Mixed Methods Approach: A Mathematics Teacher Professional Development Example*. Presented at the 2010 Annual Meeting of the American Educational Research Association, Denver, CO.
- Marshall, P.L. & **McCulloch, A.W.** (2010). *Connecting culture and mathematics: The development of a Dreamkeeper*. Presented at the Research Pre-session of the 2010 Annual meeting of the National Council of Teachers of Mathematics, San Diego, CA.
- McCulloch, A.W.** & Smith, R.C. (2010). *The nature of students' collaboration in the creation of a Wiki*. Presented at the Fourteenth Annual meeting of Association of Mathematics Teacher Educators. Irvine, CA.
- McCulloch, A.W.** & Campbell, M.P.* (2009). *Graphing calculators in high school algebra: Promotion, Perception and Use*. Research pre-session of the annual meeting of the National Council of Teachers of Mathematics, Washington, DC.
- McCulloch, A.W.** (2009). *Mathematicians, Mathematics Educators and High School Mathematics Teachers Interpretations and Judgments Regarding Calculus Students' Problem Solving Methods*. Annual conference for Research in Undergraduate Mathematics Education, Raleigh, NC.
- Marshall, P.L. & **McCulloch, A.W.**, Jones, K., Juday, K., Koskoski, G., Madison, A., & Wiggins, J. (2009). *Solid cultural foundations and strong mathematical futures: Reflections on a professional development project for K-2 teachers*. Annual meeting of the Association of Teacher Educators, Dallas, TX.
- McCulloch, A.W.** & Smith, R.C.* (2009) *Creating Asynchronous Learning Communities in Mathematics Teacher Education*, Annual Conference of the Society for Information Technology and Teacher Education, Charleston, SC.
- McCulloch, A.W.** (2008). *Calculus students' perceptions of graphing calculators and play: Am I doing math?* Eleventh Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics. San Diego, CA.

- Klerlien, J.T. & **McCulloch, A.W.** (2008). *A critical look at mathematical play with technology tools: Actions and perceptions*. Annual Convention of the School Science and Mathematics Association. Raleigh, NC.
- Goldin, G.A., Schorr, R., Alston, A., Warner, L., & **McCulloch, A.W.** (2007). *Understanding the role of affect in inner city mathematics classrooms*. Research pre-session of the annual meeting of the National Council of Teachers of Mathematics, Atlanta, GA.
- Alston, A., Goldin, G.A., Jones, J., **McCulloch, A.W.**, Rossman, C. & Schmeelk, S. (2007). *The complexity of affect in an urban mathematics classroom*. Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Lake Tahoe, CA.
- McCulloch, A.W.** (2006). *Student perspectives on graphing calculator use: Before, during and after problem solving*. Paper presented at the research pre-session of the annual meeting of the National Council of Teachers of Mathematics, St. Louis, MO.
- McCulloch, A.W.** (2006). *Building an understanding of student use of the graphing calculator as a tool for problem solving*. Paper presented at the annual conference for Research in Undergraduate Mathematics Education, New Brunswick, NJ.
- McCulloch, A.W.** (2006). *Friend or foe: AP calculus students' perspectives on graphing calculator use*. Poster presented at the fifth annual Centers for Learning and Teaching PI meeting, Washington D.C.
- McCulloch, A.W.** (2005). *Graphing calculators and the future of mathematical equity in AP calculus: A pilot study*. Poster presented at the annual meeting of the American Educational Research Association, Montreal, Quebec, Canada.

STATE / REGIONAL / LOCAL PRESENTATIONS

Note: *graduate student, **undergraduate student

- McCulloch, A.W. & Fye, K. (2023). Using the Desmos teacher dashboard to facilitate meaningful mathematics discussions. Presented at the *2023 Annual Meeting of the North Carolina Council of Teachers of Mathematics*, Winston Salem, NC.
- Wilson, P.H., McCulloch, A.W., Edgington, C.P. (2023). Discourse moves for fostering confident math learners: We all speak math. Presented at the *2023 Annual Meeting of the North Carolina Council of Teachers of Mathematics*, Winston Salem, NC.
- Dick, L. & **McCulloch, A.W.** (2022). Using the Desmos teacher dashboard to orchestrate productive discussions. Presented at the *NCTM 2022 Baltimore Regional Conference & Exposition*. Baltimore, MD.
- Wilson, P.H., Schwartz, C., Stephan, M., Mawhinney, K., & **McCulloch, A.W.** (2022). Learn about the North Carolina Collaborative for Mathematics Learning (NC²ML). Presented at the *2022 Annual Meeting of the North Carolina Council of Teachers of Mathematics*, Winston Salem, NC.

- Wilson, P.H., Schwartz, C., Stephan, M., Mawhinney, K., & **McCulloch, A.W.** (2022). North Carolina Collaborative for Mathematics Learning (NC²ML) Updates. Presented at the *2022 Annual Meeting of the North Carolina Council of Teachers of Mathematics*, Winston Salem, NC.
- McCulloch, A.W.** (2022). Positioning each and every student as math explorer with technology. Presented at the *2022 Annual Meeting of the North Carolina Council of Teachers of Mathematics*, Winston Salem, NC.
- McCulloch, A.W.**, Fye, K. Scott, G., Jones, C.** , & Fitzgerald, S.** (2018) Collaborative Design: Investigating Chords with GeoGebra! Presented at the 2018 Annual Meeting of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.
- McCulloch, A.W.**, Scott, G., Fye, K. Fitzgerald, S.** , & Jones, C.** (2018) Collaborative Design: Intro to Limits with Desmos! Presented at the 2018 Annual Meeting of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.
- McCulloch, A.W.** & Edgington, C.P. (2017). *Developing preservice teachers understanding of function using a machine metaphor applet*. Presented at the 2017 Annual Meeting of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.
- Cetner, M.* & **McCulloch, A.W.** (2017). Lessons from interdisciplinary co-planning. Presented at the 2017 Annual Meeting of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.
- Lovett, J.N., Edgington, C., **McCulloch, A.W.**, Leak, M.** , & Lawson, A.** (2016). Mathematical tasks for secondary mathematics: NCCTM student affiliate chapter members share session. To be presented at the annual meeting of the North Carolina Council of Teachers of Mathematics. Greensboro, NC.
- McCulloch, A.W.**, Aitken, M.** , Miller, J.** , & Leak, M.** (2013). *Building an understanding of trig functions*. Presented at the annual meeting of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.
- Lee, H., **McCulloch, A.W.**, Hollebrands, K., Gonzales, M.* , Pulis, T.* , Whitely, B.* , Chandler, K.* (2013). *Preparing to teach mathematics with technology: Results from eight years of teacher education curriculum development, dissemination, and research*. William & Ida Friday Institute for Educational Innovation Brown Bag Seminar. Raleigh, NC.
- McCulloch, A.W.** & Miller, J.** (2013). *Student affiliates discussion*. Presented at the annual meeting of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.
- McCulloch, A.W.**, Keene, K.A., Miller, J.** , Leak, M.** & Clark, B.** (2013). *Using motion detectors in the middle and high school classroom*. Presented at the College of Education STEM Day.
- Nickell, J.* & **McCulloch, A.W.** (2013). *New teacher resources: Games*. Presented at the annual meeting of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.

McCulloch, A.W., Keene, K.A., McDowell, K.** & Miller, J.** (2012). *Fun in the Mathematics Classroom*. Presented at the College of Education STEM Day.

Taormina, S.J.** & **McCulloch, A.W.** (2011). *Using the TI Nspire to teach Archimedes' approximation of pi*. Presented at the 2011 Annual Conference of the North Carolina Council of Teachers of Mathematics. Greensboro, NC.

McCulloch, A.W., Marshall, P.L. & DeCuir-Gunby, J.T. (2010). *Math autobiographies and early elementary teaching: What is your math story?* Presented at the 2010 Annual Conference of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.

McCulloch, A.W., Ernst, J., Limer, C.** & Taormina, S.** (2010). *STEM integration in middle school: Inquiry on the Neuse River*. Presented at the 2010 Annual Conference of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.

McCulloch, A.W., Bradick, N.**, Calicott, J.**, Foster, K.**, Hedges, J.**, Mann, L.**, Plant, L.** & Wylie, S.** (2010). *Where did this come from?: Meaningful ways to incorporate the history of mathematics into your math lessons*. Presented at the 2010 Annual Conference of the North Carolina Council of Teachers of Mathematics, Greensboro, NC.

UNIVERSITY FACULTY PROFESSIONAL DEVELOPMENT

Lovett, J.N., **McCulloch, A.W.**, Cayton, C., Dick, L., Lee, H.L., Bailey, N.G., Yalman Ozen, D., Fletcher, S., & Muthitu, P. (February 2024). *Preparing to teach mathematics with technology – examining student practices*. One day workshop for invited faculty held prior to the 2024 AMTE Conference.

Lovett, J.N., & **McCulloch, A.W.** (invited, July 2023). Preparing future secondary mathematics teachers to teach with technology. *Computing-Integrated Teacher Education at the City University of New York Summer Camp Workshop Series*. Twenty hour workshop for teacher preparation faculty in the 17 campus CUNY system.

Lovett, J.N., **McCulloch, A.W.**, Cayton, C., Dick, L., Lee, H.L., Bailey, N.G., Yalman Ozen, D., Fletcher, S., & Muthitu, P. (February 2023). *Preparing to teach mathematics with technology – examining student practices*. One day workshop for invited faculty held prior to the 2023 AMTE Conference.

Stephan, M. & **McCulloch, A.W.** (January 2021). Practice based teacher education in an online space. Panel discussion hosted by the University of North Carolina at Charlotte College of Education.

Hollebrands, K.F., **McCulloch, A.W.**, Scher, D., & Stekettee, S. (February 2021). Online technology-based lessons to support secondary preservice mathematics teachers' understanding of functions. Presented at the 2021 *Annual Meeting of the Association of Mathematics Teacher Educators special session to support faculty teaching online in response to COVID-19*.

Hollebrands, K.F., **McCulloch, A.W.**, Scher, D., & Stekette, S. (2020, May). *Technology-Rich Units for Future Secondary Teachers: Forging Mathematical Connections Through Geometry of Functions*. Interactive online workshop to support faculty teaching online in response to COVID-19.

McCulloch, A.W. (2014, November). *Preparing to teach mathematics with technology: Continued faculty professional development in algebra*. Webinar presented from the William & Ida Friday Institute for Educational Innovation, Raleigh, NC.

McCulloch, A.W. & Lee, H. (2014, May) *Preparing to teach mathematics with technology: Faculty professional development in algebra and statistics*. Webinar presented from the William & Ida Friday Institute for Educational Innovation, Raleigh, NC.

McCulloch, A.W., Lee, H., & Hollebrands, K. (2013, June). *Preparing to teach mathematics with technology: Faculty professional development in algebra*. Three day workshop held at the William & Ida Friday Institute for Educational Innovation, Raleigh, NC.

Lee, H., Hollebrands, K., & **McCulloch, A.W.** (2012, May). *Preparing to teach mathematics with technology: Faculty professional development in geometry*. Three day work shop held at the William & Ida Friday Institute for Educational Innovation, Raleigh, NC.

McCulloch, A.W. (2010, February). *Japanese Lesson Study: Practicalities of implementation with prospective teachers*. Workshop for the faculty of the NC State Department of Elementary Education, Raleigh, NC.

K-12 TEACHER/LEADER PROFESSIONAL DEVELOPMENT

McCulloch, A.W. (March 2023). *Teaching secondary math with technology*. Invited presenter for a one day professional development seminar for the Asheboro- Randolph Collaborative.

McCulloch, A.W. & Wilson, P.H. (August 2021). *Positioning All Students to be Mathematical Explorers with Technology*. Invited presenter for the Triangle High Five Consortium 2021 Math Summit.

McCulloch, A.W. (January, 2019). *Creating Opportunities for Professional Learning Using the NC²ML Resources*. Workshop for the STEM Leadership PLC through the UNC Charlotte STEM Center focused on using the NC²ML resources to support implementation of the NC Math 1, 2, and 3 revised standards.

Wilson, P.H., **McCulloch, A.W.**, Webb, J., & Baucom, L. (October, 2017). *North Carolina Collaborative for Mathematics Learning High School Design Teams Workshop*. Half day research practice partnership workshop for the NC²ML high school design team focused on the development of project materials and actions for NC high school standards implementation support.

McCulloch, A.W., Wilson, P.H., Webb, J., Curtis, J. (July, 2017). *North Carolina Collaborative for Mathematics Learning High School Leadership Seminar*. Two day research and

partnership seminar for high school mathematics teachers and teacher leaders in North Carolina.

McCulloch, A.W., Edgington, C., Jeffery, P., & Faher, N. (2016). *Developing school / university partnerships*. One day workshop presented to potential partner schools. Raleigh, NC.

Starling, T., Smith, M., & **McCulloch, A.W.** (2015). *Mentoring preservice teachers: Strategies for successful mentor relationship and student learning*. Two day workshop presented to WCPSS secondary STEM teachers interested in mentoring student teachers. Raleigh, NC.

Keene, K.A. & **McCulloch, A.W.** (2015). *Implementing the Common Core – Mathematics*. Two day workshop presented to the North East Leadership Academy Participants, Rocky Mount, NC.

McCulloch, A.W. (2013). *Connecting big ideas*. Presented at the Common Core Mathematics: Classroom Connections Conference. Raleigh, NC.

Wilson, P.H. & **McCulloch, A.W.** (2012). *How to get students to connect the big ideas*. Invited presenter for the Triangle High Five Consortium / SAS sponsored 2012 Math Summit, Cary, NC.

Keene, K.A. & **McCulloch, A.W.** (2013). *Implementing the Common Core – Mathematics*. Two day workshop presented to the North East Leadership Academy Participants, Rocky Mount, NC.

Wilson, P.H. & **McCulloch, A.W.** (2012). *Connecting big ideas*. Two day workshop presented as part of the SAS Math Summit: Implementing the Common Core, Cary, NC.

Marshall, P.L. & **McCulloch, A.W.** (2008). *NMD research project: Culturally relevant mathematics teaching*. Two day workshop presented to the control group teachers of the Nurturing Mathematics Dreamkeepers Project, Raleigh, NC.

Marshall, P.L. & **McCulloch, A.W.** (2008). *Reflections on a journey, plans for a quest*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.

Marshall, P.L. & **McCulloch, A.W.** (2008). *Cross cultural competence and K-2 mathematics*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.

Marshall, P.L. & **McCulloch, A.W.** (2008). *Reflections on the NMD Mini-Conference*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.

Marshall, P.L. & **McCulloch, A.W.** (2008). *Algebra in K-2 mathematics: A case for CRP*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.

- Marshall, P.L. & **McCulloch, A.W.** (2008). *Elementary teachers as keepers of the dream*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.
- Marshall, P.L. & **McCulloch, A.W.** (2008). *Our mathematics stories*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.
- Marshall, P.L. & **McCulloch, A.W.** (2008). *Culturally relevant dreamkeeper*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.
- Marshall, P.L. & **McCulloch, A.W.** (2007). *What's culture got to do with it?: A preview of the conception-based mathematics teaching-learning orientation*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.
- Marshall, P.L. & **McCulloch, A.W.** (2007). *The importance of subitizing*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.
- Marshall, P.L. & **McCulloch, A.W.** (2007). *Enhancing K-2 mathematics teaching & learning through cultural values awareness*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.
- Marshall, P.L. & **McCulloch, A.W.** (2007). *Introduction to NMD: A focus on understanding K-2 mathematics and the role of culture*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.
- Marshall, P.L. & **McCulloch, A.W.** (2007). *Getting acquainted with NMD*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.
- Marshall, P.L. & **McCulloch, A.W.** (2007). *What is a Mathematics Dreamkeeper?*. Two day workshop presented to the Nurturing Mathematics Dreamkeepers Project participants. Raleigh, NC.

GRANT ACTIVITY

EXTERNALLY FUNDED GRANTS

Collaborative Research: Using ASSISTments for College Math: An Evaluation of the Effectiveness and Transferability of Findings [ASSISTments]. (April 2023 – March 2025) National Science Foundation. This project aims to determine whether the use of ASSISTments at the college level leads to similar gains in mathematics learning and analogous changes in pedagogical practices as was reported at the middle school and high school levels by adapting prior studies. Over 100 randomized control trials have been conducted to evaluate the effectiveness of supports, but these have primarily occurred at the middle school level. This project aims to determine whether the use of ASSISTments at the college level leads to similar gains in mathematics learning and analogous changes in pedagogical practices as was reported at the middle school and high school levels. This

will be accomplished by replicating studies at the college level which have been shown in the literature to be “Best So Far” supports – those supports which have significantly impacted student learning the most. PI: Allison McCulloch, Co-PI: Michael Smalenberger, PI: Neil Heffernan, PI: Cristina Heffernan, PI: Kelly Smalenberger, Co-PI: Chad Estabrooks. (\$134,869).

Collaborative Research: Co-Designing for Statewide Alignment of a Vision for High Quality Mathematics Instruction [VISIONS]. (July 2021 – June 2025) National Science Foundation. Focused on grades K-12 mathematics education, the VISIONS project aims to test the conjecture that developing a shared vision of HQMI is foundational to the successful implementation of STEM education innovations. We will use a two-fold approach: (1) a continuation of the design-based implementation research cycle used by the RPP, including regular opportunities for statewide listening and dissemination sessions and grade-band co-design to address shared problems of practice; and (2) a mixed methods study of visions of HQMI across the state with a closer examination of six case districts to understand the role visions of HQMI plays in the co-design and taking up of resources within and across the system. PI: Katie Schwartz, PI: Holt Wilson, **PI: Allison McCulloch**, PI: Katie Mawhinney, Co-PI: Michelle Stephan. (\$2,964,617)

Workshop on Undergraduate Teaching with Mathematics and Statistics Action Technologies (September 2020 – August 2021) National Science Foundation. This project aims to address the issue of faculty expertise in teaching undergraduate courses for future secondary mathematics teachers by planning and implementing a 2.5-day workshop for instructors of undergraduate content and methods courses that are intended to prepare future teachers to teach mathematics with technology. Specifically, we will provide beginning through advanced level workshops in which faculty will learn how to use mathematics action technologies as learners and consider the ways they might implement them in their courses. **PI: Allison McCulloch**, Co-PI: Jennifer Lovett (\$99,801)

Supplement for Rapid Dissemination of Technology-Rich Units for Future Secondary Teachers: Forging Dynamic Connections Between Geometry and Functions. (May 2020 – December 2020) National Science Foundation. Mathematics teacher educators across the globe are addressing the challenge of moving their undergraduate classes online. Our project is in the unique position to disseminate high-quality, open-access, technology-based activities that mathematics teacher educators can easily incorporate into an online course. This supplemental project will provide an Interactive Online Workshop for mathematics teacher educators to provide them information about the activities we have developed that they can use with their preservice teachers. PI: Karen Hollebrands; **Co-PI: Allison McCulloch**, Co-PI: Daniel Scher, Co-PI: Scott Stekettee (\$14,827).

UNC Charlotte Teacher Quality Partnership (September 2020 – August 2025) United States Department of Education. This project aims to provide a living wage for a select group of aspiring teachers while completing the UNC Charlotte Teacher Residency Program. The program is designed to diversify the teaching workforce for understaffed subject areas and high-need schools in our partner school district. PI: Teresa Petty, Co-PI: Ellen McIntyre, Co-PI: Scott Kissau, Co-PI: Paul Fitchett, Co-PI: Drew Polly, **Co-PI: Allison McCulloch**. (\$1.8 Million)

Preparing to Teach Mathematics with Technology – Examining Student Practices (October 2018 – December 2024) National Science Foundation. This project aims to 1) create seven technology-based curricular units for undergraduate mathematics education students to examine secondary students' mathematical practices, 2) implement and test the materials in undergraduate mathematics education courses, and 3) disseminate the curricular materials and research how undergraduate mathematics education students deepen their mathematical knowledge for teaching by engaging with the materials. PI: Jennifer Lovett, **PI: Allison McCulloch**, PI: Charity Cayton, PI: Hollylynne Lee. (\$1.7 Million)

Technology-Rich Units for Future Secondary Teachers: Forging Mathematical Connections Through the Geometry of Functions (August 2017 – June 2020). National Science Foundation. This project aims to create and test five web-based mathematics units for pre-service teachers that promote a highly geometric approach, cultivating in teachers a robust conception of the secondary mathematics courses they will teach. PI: Karen Hollebrands, **Co-PI: Allison McCulloch**, Co-PI: Scott Steketee, Co-PI: Daniel Scherr (\$299,986)

Expanding the North Carolina Collaborative for Mathematics Learning (August 2017 – December 2018). North Carolina Department of Public Instruction. The goal of this project is to partner with DPI and school districts around the state to support the implementation of the revised high school, middle school, and elementary mathematics standards. PI: Holt Wilson (UNCG), Co-PI: Lisa Ashe (NC DPI), **Co-PI: Allison McCulloch** (UNCC), Co-PI: Katie Schwartz (ECU), Co-PI: Katie Mawhinney (Appalachian State), Co-PI: Michelle Stephan (UNCC). (\$520,000).

North Carolina Collaborative for Mathematics Learning (August 2016 – July 2017). North Carolina Department of Public Instruction. The goal of this project is to partner with DPI to plan and develop content sessions and related instructional resources for NC Math 1, 2, and 3. In addition, the project will develop and complete a research study on the process and intermediate outcomes of the implementation of the three high school math courses. PI: Holt Wilson (UNCG), Co-PI: Jennifer Curtis (NC DPI) **Co-PI: Allison McCulloch** (NC State), Co-PI: Katie Mahwinney (Appalachian State University), Co-PI: Michelle Stephan (UNCC), Co-PI: Kim Hewitt (UNCG) (\$401,638).

Mathematics and Pedagogy: Training for Implementation of High School Common Core Standards for Mathematics (2015 – 2017). University of North Carolina General Administration, NC QUEST Program. The purpose of this project is to support high school mathematics teachers' implementation of the Common Core State Standards in Mathematics (CCSS-M). Professional development focused on mathematics content and research-based pedagogical strategies specific to mathematics will be provided in the form of five, three credit hour courses over a fifteen-month period. 18 teachers from five high-needs high schools in the Wake County Public School System will be recruited as MAP:TICCS Fellows. The intent is to develop a cohort of teachers at each school who have a deep understanding of the content they are teaching, who utilize effective pedagogical practices, and who utilize peer coaching to assist and support other mathematics teachers in their schools. PI: Karen Hollebrands, Co-PI: Sonya Dupree, Co-PI: Molly Fenn, Co-PI: Andrew Cooper, Evaluators: **Allison McCulloch** & Karen Keene. (\$310,000)

Preparing to Teach Mathematics with Technology: Expanding, Transforming, & Building Community (2011 – 2017). National Science Foundation. Project continues work started in a previous grant, *Preparing to Teach Mathematics with Technology*, in which high quality curricular materials were developed related to data analysis and statistics and geometry. In this project plans to develop and evaluate an algebra module, build a community of mathematics teacher educators across the US using our approach, and research any transformative impacts on the development of prospective teachers understanding of how to use technology in teaching. PI: Hollylynne Lee, Co-PI: Karen Hollebrands, **Co-PI: Allison McCulloch**. (\$670,00)

Transforming Teaching Through Implementing Inquiry (2011 – 2015). National Science Foundation. This is a professional development research project aimed to increase technology, engineering, and design education teachers: a) understanding of engineering-design concepts and ability to more effectively teach these concepts to their students; b) understanding of the learning needs of students and how to adjust instruction to meet those needs; c) ability to manage, monitor, and adjust the learning environment to improve instruction; d) ability to use self-assessment techniques to improve their teaching skills; and e) ability and willingness to contribute to the learning community, through a research based, highly interactive cyber infrastructure for providing professional development to in-service and lateral entry teachers. PI (Virginia-Tech): Jeremy V. Ernst, PI (NC State): Aaron Clark, Co-PI: Bill DeLuca, Co-PI: Scott Ferguson, **SR: Allison McCulloch**, SR: Laura Bottomley, SR: John Park. (\$1,997,532).

Nurturing Mathematics Dreamkeepers (2007 – 2014). National Science Foundation. A 5 year professional development research project for K-2 teachers of invited schools within the Wake County Public School System. To study the influence of an intervention designed to promote the tenets of culturally relevant pedagogy and a conception-based perspective of mathematics on K-2 teachers' mathematics lessons and ultimately their students' achievement. PI: Patricia L. Marshall, Co-PI: Jessica DeCuir-Gunby, **Co-PI: Allison McCulloch**. (\$4.2 million).

INTERNALLY FUNDED GRANTS

Main Enrichment Designed to Increase Achievement & Networking (2012 - 2013) NC State Office for Institutional Equity & Diversity through the Diversity Mini-grant program. The goal of the project is to improve the retention and graduation of the students from historically underrepresented groups in mathematics education through their participation in a weekly workshop designed to strengthen the depth of their mathematical understanding and develop a community of learners that will provide academic support for one another as they progress through the mathematics education program. PI: Allison Mitchall, Co-PI: Eileen Williams, **Co-PI: Allison McCulloch**, Co-PI: Karen Keene. (\$2, 700).

Graphing Calculators: Promotion, Perception and Use (2008 - 2010). NC State Faculty Research and Professional Development Fund. The research project focused on an Algebra 1 class at Enloe High School. The study was designed to follow a teacher and her students through a single instructional unit to try to understand the impact of the

students' perceptions of the teacher's promotion of the graphing calculator on their decisions to use them in independent situations. **PI: Allison McCulloch.** (\$5,999).

OPEN EDUCATIONAL RESOURCE DEVELOPMENT

North Carolina Collaborative for Mathematics Learning (2016 – current)

I have worked with colleagues in the NC²ML project to develop, field test, revise, implement, and disseminate a series of online professional development modules and research briefs open to all NC Math 1, 2, and 3 teachers across the state of North Carolina. Twelve modules went live Spring 2017 with the remaining modules scheduled for launch fall 2017. As of September 2017, we had over 2300 active users, including 91,000+ page views between July – September 2017. For more information go to: <http://nc2ml.org/>

Preparing to Teach Mathematics with Technology (2011 – current)

Since 2011 I have worked with many colleagues to develop, field test, revise, implement, and disseminate a series of three modules to assist teacher educators to prepare middle and secondary teachers to teach mathematics using dynamic technology tools. Modules include text, digital technology files, videos of students and teachers working with technology, sample solutions, facilitator guides, and suggested readings. Two modules were originally published by Kendall Hunt. In 2015, to better meet the needs of teacher educators and preservice teachers, all materials were converted to digital formats and an online portal was created to house all materials, with access made free. In 2017, we added another module to the web portal called “Voices from the Field” which includes a collection of video clips representing how early career teachers use technology in their math lessons. In February 2021 the first modules related to the newest funded project, PTMT – Examining Student Practices in Algebra, were launched. As of spring 2021, the web portal has over 1100 registered users. For more information go to: <http://go.ncsu.edu/ptmtportal>.

COLLABORATIVE SCHOLARLY ACTIVITIES

Mathematics Teacher Education Project 2.0 North Carolina team member and UNC-C team lead. (2020 – present). This program, sponsored by APLU, provides a coordinated research, development, and implementation effort for secondary mathematics teacher preparation programs. The North Carolina team (partners include ECU, NCSU, UNCG, UNCW, WSSU, FSU, and UNCP) is specifically working on recruitment and retention of secondary mathematics education students.

Mathematics Teacher Education Project Team Leader in partnership with UNC-C, UNC-G, App State and NC DPI (2017 – 2020). This program, sponsored by APLU, provides a coordinated research, development, and implementation effort for secondary mathematics teacher preparation programs building on the work of the NC²ML project.

North Carolina Collaborative for Mathematics Learning (NC²ML) in partnership with faculty at UNC-G, Appalachian State, and ECU along with colleagues at NC DPI and school

districts across the state. The goal of NC²ML is to support mathematics teachers and teacher leaders in the implementation of the newly revised NC Mathematics Standards.

Mathematics Teacher Education Project Participant with the NC State Mathematics Education program (2012 – 2017). This program, sponsored by APLU, provides a coordinated research, development, and implementation effort for secondary mathematics teacher preparation programs. Our group has been focused on professional experiences.

US – Sino Workshop on Mathematics and Science Education, Murfreesboro, TN, July 2008. NSF Funded workshop focused on identifying common priorities that promote collaborative research.

MetroMath Center: The Center for Mathematics in America's Cities. MetroMath Fellowship, Rutgers University. 2004 – 2007. MetroMath was a partnership among Rutgers, University of Pennsylvania, and City University of New York, funded by the National Science Foundation, with the goal of developing a new generation of leaders in mathematics education for urban schools.

TEACHING AND MENTORING

COURSES TAUGHT AT UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE

MATH 4109/5109	History of Mathematical Thought
MAED 4252/5252	Teaching Mathematics to Secondary School Students
MAED 4103/5104	Teaching Secondary Mathematics with Technology
MAED 4105	Secondary Mathematics from and Advanced Perspective
EDCI 8160	Readings in Mathematics Education
EDCI 8114	Advanced Topics in Mathematics Education (Theoretical Frameworks in Mathematics Education Research)

COURSES TAUGHT AT NC STATE

EMS 203	Introduction to Teaching Mathematics
EMS 480/580	Teaching Mathematics with Technology
EMS 471	Student Teaching in Mathematics
EMS 472/572	Teaching Mathematics Topics in Senior High School
EMS 490	School Mathematics from and Advanced Perspective
EMS 510	Interactions in the Mathematics Classroom
EMS 513	Teaching and Learning of Algebraic Thinking
EMS 592	Special Problems in Mathematics Teaching
EMS 695	Special Topics in Mathematics and Science Education
EMS 792x	Mathematics Education Research Literature and Methods
EMS 841	Practicum in Science and Mathematics Education
EMS 851	Internship in Mathematics Education
MA 433	History of Mathematics
ED 730	Introduction to Qualitative Research

MENTORING OF STUDENTS

DOCTORAL STUDENTS

Committee Chair or Co-Chair

Current:

Lanre Oriowo
Kristen Fye
Allison Ellowson
Tierra Fender

Graduated:

*Nina G. Bailey (2023, Assistant Professor, Montclair State University) – *Awarded the 2024 Association of Mathematics Teacher Educators Dissertation Award*
James Strickland (2019, Director of the Mathematics Tutoring Center, Wake Tech Community College)
Michelle Cetner (2017, Lecturer, East Carolina University)
Maggie Gonzales (2016, Assistant Professor, University of Puerto Rico)
Tracy White (2016, Assistant Professor, Winston Salem State University)
Nadia Monroe (2015, Assistant Professor, University of the Virgin Islands)
Erin Krupa (2011, Associate Professor, Montclair State University)

Committee Member

Current:

Demet Yalmen Ozen (MTSU)
Emily Hare (UNC – Greensboro)
Cathy Holl-Cross

Graduated:

Paul Wonsavage (2021), Josh Griffin (2021), Fred Coon (2019), Blain Patterson (2019), Andras Paul (2018), Meetal Shah (2108), Nick Fortune (2018), Lalia Thompson (2018), Kemal Akoglu (2018), Angelina Knies (2018), Derek Williams (2017), Kayla Chandler (2017), Jen Nickell (2016), Emily Thrasher (2015), Celethia McNeil (2015), Carrie Ritter (2015), Aaron Trocki (2015), Marielle Myers (2014), Ayanna Franklin (2013), Charity Cayton (2012), Cyndi Edgington (2012), Drew Corley (2013), Kay Pitchford (2013), John Hutchins (2013), Krista Holstein (2012), Anthony Dove (2011), Kenny Nguyen (2011), Peter Eley (2011), Gemma Mojica (2010), Holt Wilson (2010), Miranda Cave (2008), Rachael Kenney (2008)

MASTERS STUDENTS (**chair of thesis committee for MS, *Advisor for M.Ed.)

Kathleen Epperson**(2017), Cassie McLean **(2016), Samantha Porter*(2015), Lauren Huntley (2015), Sara Hortsman* (2014) , Reema Alnizami* (2014), James Hilburn (2014), Angela Coticchio (2013), Chris Wredberg (2013), Jenna Rice (2013), Bethany Peters (2012), Winnie Namatovu** (2011), Maggie Gonzales* (2011), Zuhail Yilmaz* (2011), Britany Bell (2011), Dana Jones (2011), Craig Lazarski (2010), Brittany Black (2010), Morgan Early* (2010), Matt Campbell* (2009), , Susan Thomes (2009), Derek Blackwelder (2009), Lesley Clayton (2008), Cyndi Edgington** (2008)

UNDERGRADUATE STUDENTS

UNCC Senior Honors Project Committee Chair – Jacob Masten (2022-2023)

UNCC Department of Mathematics and Statistics Senior Project Faculty Mentor: Brett Parker (2024), Drew Willett (2022), Jennifer Helms (2021), Korey Dansby (2019), Samantha Fitzgerald (2018)

Park Scholars Research mentor: Ashley Lawson (2013 – present), Margaret Leak (2012 – 2015), Kelsey McDowell (2011 – 2014), Jordan Miller (2011 – 2015), Sara Taormina (2008 – 2012)

STEM Education Fellows undergraduate research mentor: Andy Khounmeuang (2016 – 2017), Julia Brenneman (2016 – 2017)

NC State Undergraduate Research Program, research mentor: Ebonee Taylor (2011 – 2013)

SERVICE

FIELD OF MATHEMATICS EDUCATION

National Council of Teachers of Mathematics

Invited to be on the writing team for the revision of the NCTM position statement on technology, (2022 – 2023) Expected to be board approved and released in May 2023.
Writing Mentor, Mathematics Teacher: Learning and Teaching PK – 12. (2021)

Research Council on Mathematics Learning

Editorial Board of Investigations in Mathematics Learning
January 2021 – December 2023
January 2024 – December 2026

Association of Mathematics Teacher Educators

Co-Editor, Contemporary Issues in Technology and Teacher Education – Mathematics,
January 2022 – January 2025
Editorial Board of Contemporary Issues in Technology and Teacher Education –
Mathematics, January 2019 – December 2021

Association of Mathematics Teacher Educators – North Carolina Chapter

President, Spring 2019 – Spring 2022
President Elect, Spring 2017 – Spring 2019

Psychology of Mathematics Education, North America Chapter

Strand Leader, 2021 Conference
Local Organizing Committee member, 2018 Conference

Grant Proposal Reviewer for National Science Foundation

Reviewer and panelist for grant proposals submitted to NSF under NOYCE solicitation (2017, 2018, 2020)
Reviewer and panelist for grant proposals submitted to NSF under the CORE solicitation (2019)

National Advisory Board Member for National Science Foundation Grants

Preparing Secondary Mathematics Teachers with Video Cases of Students' Functional Reasoning (2017 – present)

E-Communities: Investigating how a collaboration between STEM educators and engineers impact underserved youth's participation in engineering design (2018 – 2019)

STEM Teams: Promoting Science, Technology, Engineering, and Mathematics (STEM) career interest, skills, and knowledge through Strategic Teaming (2011 – 2013)

Re-designed High Schools for Transformed STEM Learning (2010 – 2013)

Manuscript Referee (Review 1 – 3 manuscripts per year)

International Journal of Technology in Mathematics Education (2008 – present)

Teaching Children Mathematics (2008 – present)

Mathematics Teacher (2008 – present)

Journal for Urban Mathematics Education (2008 – present)

Journal for Research in Mathematics Education (2009 – present)

Journal of Mathematical Behavior (2009 – present)

School Science and Mathematics (2010 – present)

Journal of Mathematics Teacher Education (2015 – present)

Contemporary Issues in Technology and Teacher Education (2017 – present)

Mathematics Teacher Educator (2019 – present)

Computers and Education (2020 – present)

Investigations in Mathematics Learning (2020 – present)

International Journal of Mathematics and Mathematical Sciences (2020 – present)

Mathematics Teacher: Learning and Teaching PK-12 (2021 – present)

Chapter Referee

Handbook for Research on Transforming Mathematics Teacher Education in the Digital Age (2015 – 2016)

Online Learning in Mathematics Education (2020)

Proposal Reviewer

Psychology in Mathematics Education North America Group Conference

Association of Mathematics Teacher Educators

National Council of Teachers of Mathematics Research Conference

SERVICE - UNIVERSITY OF NORTH CAROLINA AT CHARLOTTE

UNIVERSITY SERVICE

UNC Charlotte Faculty Executive Committee, College of Liberal Arts and Sciences

Representative (2022 – 2024)

DEPARTMENT SERVICE

UNC Charlotte Department Review Committee (2022 – 2023)

UNC Charlotte Department Head Advisory Committee (2021-2022)

UNC Charlotte GTA Mentor (2022 – present)

UNC Charlotte Curriculum and Instruction PhD program – Urban Mathematics Education concentration program co-coordinator (2021 – present)

UNC Charlotte Curriculum and Instruction PhD program - Urban Mathematics Education concentration – Reading and Writing Group organizer (2020 – present)

UNC Charlotte Curriculum and Instruction PhD program - Urban Mathematics Education concentration –Representative (with Vic Cifarelli) for Curriculum and Instruction Graduate Program Meetings (2020 – present)

UNC Charlotte department workload document revision committee (2019)
UNC Charlotte mathematics education committee (2018 – present)
UNC Charlotte mathematics department advising committee (2018 – present)
UNC Charlotte, College of Education Program Revisioning Task Force Member (2018 – present)

FACULTY SEARCH COMMITTEES

Tenure Track, Mathematics Education, committee member, Fall 2023 – Spring 2024
Lecturer / Teacher in Residence, Mathematics Education, committee member, Fall 2018

SERVICE - NC STATE UNIVERSITY

DEPARTMENT SERVICE

NC State Department of STEM Education Undergraduate Programs Coordinator (2014 – 2017)
NC State Faculty Undergraduate Program Coordinator, Mathematics Education (2013 – 2017)
NC State North Carolina Council of Teachers of Mathematics, Kappa Chapter Faculty Co-Sponsor (2009 – 2017)
NC State Master of Arts in Teaching, Mathematics Education Program interim co-coordinator (January – April, 2009)
NC State Department of Mathematics, Science and Technology Education Scholarships Committee (2008-2014)

FACULTY SEARCH COMMITTEES

Mathematics Education,
Teaching Assistant Professor, committee member, Spring 2017
Teaching Assistant Professor, committee member, Fall 2012
Science Education,
Assistant Professor, committee member, committee member, Fall 2014

COLLEGE SERVICE

NC State College of Education Research, Promotion, and Tenure Committee (Summer 2016 – 2017)
NC State Council of Education Program Coordinators Committee (2013 – 2017)
NC State College Faculty Awards Committee Chair (2014 – 2015)
NC State College Faculty Awards Committee Member (2013 – 2016)
NC State College Courses and Curriculum Committee (Fall 2015)
NC State College of Education library task force member (2012 – 2014)
NC State College of Education task force for electronic evidences member (2009 – 2010)
NC State College of Education task force for the 1:1 laptop initiative for teacher education and masters of school administration programs member (2009-2011)

UNIVERSITY SERVICE

NC State Park Faculty Scholar for the class of 2017 (2013 – 2017)
NC State Alliance for Graduate Education and the Professoriate (AGEP) Faculty Mentor (2008 – 2011)
NC State Park Scholarship Program Faculty Mentor (2008 – 2017)

EXTENSION AND OUTREACH

NC State Park Scholars, Selection Committee, 2018, 2019
Mathematics Curriculum Volunteer Consultant, Trinity Episcopal Lower School, 2018 - 2019
North Carolina Department of Public Instruction Task Force member to determine NC Praxis standards, Spring 2012
Triangle High Five Math Summit participant, 2011, 2012, 2018
Wake County Public School System, Wake Early STEM College, mathematics curriculum writing team member, 2010 – 2011

CURRENT PROFESSIONAL MEMBERSHIPS

Psychology of Mathematics Education – North American Chapter
Association of Mathematics Teacher Educators
National Council of Teachers of Mathematics
North Carolina Council of Teachers of Mathematics
Association of Mathematics Teacher Educators – North Carolina
Mathematics Association of America – Special Interest Group for Research in Undergraduate Mathematics Education
Research Council on Mathematics Learning