Aaron D. Weinberg

Contact Information

Department of Mathematics
Ithaca College
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Employment

Professor — **Ithaca College**
Department of Mathematics — 2019–Present

Associate Professor — **Ithaca College**
Department of Mathematics — 2011–2019

Assistant Professor — **Ithaca College**
Department of Mathematics — 2005–2011

Part-time Assistant Professor — **University of Georgia-Athens**
Department of Mathematics — 2007

Teaching Assistant — **University of Wisconsin-Madison**
Department of Mathematics — 1999–2005

Project Assistant — **University of Wisconsin-Madison**
Wisconsin Center for Education Research — 2002–2005

Fellow — **University of Wisconsin-Madison**
K Through Infinity Systemic Initiative — 2003–2004

Education

Ph.D., Mathematics, with Specialty in Mathematics Education, August 2005
University of Wisconsin-Madison, Madison, WI
Advisor: Dr. Robert Wilson
Minor: Curriculum & Instruction

M.A., Mathematics, May 2001
University of Wisconsin-Madison, Madison, WI

B.A., Mathematics, June 1999; Magna Cum Laude
Williams College, Williamstown, MA

Current Research Areas

Students' learning from mathematics texts: Textbooks, instructional videos, and lectures

- Student learning of calculus from instructional videos
- Student and instructor use of—and learning from—textbooks

Development of intellectual need-provoking tasks

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Articles in Peer-Reviewed Journals

Weinberg, A. & Jones, S., & Tallman, M. (In Preparation). A model for designing intellectual need-provoking tasks.

Weinberg, A., Corey, D., Tallman, M., & Martin, J. (In Preparation). Student learning from instructional calculus videos.

Weinberg, A., Martin, J., & Tallman, M. (In Preparation). Signal types and attention in instructional videos.

Weinberg, A., Martin, J., & Tallman, M. (Submitted). Attentive fidelity: An analytical construct for examining students' attentive behavior while viewing instructional videos. *Educational Studies in Mathematics*.

Fulmer, E. F., Dobbs, C., Weinberg, A., & Wiesner, E. (2022). Disciplinary Literacy, Agency, and Didactical Texts: Findings From a Calculus Textbook Think Aloud Study. *Reading Psychology, 43* (8), 628-659. doi:10.1080/02702711.2022.2126048

Weinberg, A., Corey, D., Jones, S., Tallman, M., & Martin, J. (2022). Observing intellectual need and its relationship with undergraduate students' learning of calculus. *International Journal of Research in Undergraduate Mathematics Education.* doi:10.1007/s40753-022-00192-x

Weinberg, A., Wiesner, E., & Fulmer, E. F. (2022). Didactical disciplinary literacy in mathematics: Making meaning from textbooks. *International Journal of Research in Undergraduate Mathematics Education* doi:10.1007/s40753-022-00164-1

Wiesner, E., Weinberg, A., Fulmer, E. F., & Barr, J. (2020). The roles of textual features, background knowledge, and disciplinary expertise in reading a calculus textbook. *Journal for Research in Mathematics Education, 51* (2), 204-233. doi:10.1080/0020739X.2018.1426794

Weinberg, A., & Thomas, M. (2018). Student learning and sense-making from video lectures. *International Journal of Mathematical Education in Science and Technology, 49*(6), 922-943. doi:10.1080/0020739X.2018.1426794

Weinberg, A., Dresen, J., & Slater, T. (2016). Students' understanding of algebraic notation: A semiotic systems perspective. *Journal of Mathematical Behavior, 43*, 70-88. doi:10.1016/j.jmathb.2016.06.001

Weinberg, A., Wiesner, E., & Fukawa-Connelly, T. (2016). Mathematics lectures as narratives: Insights from network graph methodology. *Educational Studies in Mathematics, 91(2)*, 203-226. doi:10.1007/s10649-015-9663-6

Weinberg, A., Fukawa-Connelly, T., & Wiesner, E. (2015). Characterizing instructor gestures in a proof-based mathematics lectures. *Educational Studies in Mathematics 90(3)*, 233-258. doi:10.1007/s10649-015-9623-1

Weinberg, A., Wiesner, E., & Fukawa-Connelly, T. (2014). Students' sense-making frames in mathematics lecture. *Journal of Mathematical Behavior, 33*, 168-179. doi:10.1016/j.jmathb.2013.11.005

Weinberg, A., Wiesner, E., Benesh, B., & Boester, T. (2012). Undergraduate students' self-reported use of mathematics textbooks. *PRIMUS, 22* (2), 152-175. doi:10.1080/10511970.2010.509336

Weinberg, A., & Wiesner, E. (2011). Understanding mathematics textbooks through reader-oriented theory. *Educational Studies in Mathematics 76* (1), 49-63. doi:10.1007/s10649-010-9264-3

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McNeil, N., Weinberg, A., Stephens, A., Hattikudur, S., Asquith, P., Knuth, E., & Alibali, M. (2010). A is for apple: Mnemonic symbols hinder students' interpretation of algebraic expressions. *Journal of Educational Psychology. 102*(3), 625-634. doi:10.1037/a0019105

Weinberg, A., Wiesner, E., & Pfaff, T. (2010). Using informal inferential reasoning to develop formal concepts. *Journal of Statistics Education 18(2).* doi:10.1080/10691898.2010.11889494

Pfaff, T., & Weinberg, A. (2009). Do hands-on activities increase student understanding?: A case study. *Journal of Statistics Education 17(3).* doi:10.1080/10691898.2009.11889536

Knuth, E., Alibali, M., McNeil, N., Weinberg, A., & Stephens, A. (2005). Middle school students' understanding of core algebraic concepts: Equality & variable. *Zentralblatt Für Didaktik der Mathematik* (International reviews on mathematical education), 37(1), 68-76. doi:10.1007/978-3-642-17735-4_15

Loepp, S., & Weinberg, A. (2001). Generic formal fibers of polynomial rings. *Journal of Pure and Applied Algebra*, 163(1), 93-106. doi:10.1016/S0022-4049(00)00126-2

Peer-Reviewed Papers in Conference Proceedings

Weinberg, A., & Tallman, M., & Jones, S. (In Press). Theoretical considerations for designing and implementing intellectual need-provoking tasks. To appear in *Proceedings of the 25th Annual Conference on Research in Undergraduate Mathematics Education*

Corey, D., Weinberg, A., & Tallman, M. (2022). Observing intellectual need in online instructional tasks. In Karunakaran, S. S. & Higgins, A. (Eds.). *Proceedings of the 24th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 135-142). Boston, MA: Boston University.

Weinberg, A., & Jones, S. (2022). A framework for designing intellectual need-provoking tasks. In Karunakaran, S. S. & Higgins, A. (Eds.). *Proceedings of the 24th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 884-892). Boston, MA: Boston University.

Weinberg, A., Tallman, M., & Martin, J., (2021) The effects of instructors and student activity in learning from instructional calculus videos. In Olanoff, D., Johnson, K., & Spitzer, S. (Eds.). *Proceedings of the 43rd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.* (pp. 1733-1737). Philadelphia, PA.

Weinberg, A., & Jones, S. (2020). A theorization of learning environments to support the design of intellectual need-provoking tasks in introductory calculus. In Karunakaran, S. S., Reed, Z., & Higgins, A. (Eds.). *Proceedings of the 23rd Annual Conference on Research in Undergraduate Mathematics Education* (pp. 787-795-786). Boston, MA: Boston University.

Weinberg, A., Tornai, J., Thomas, M., Martin, J., Tallman, M., & Newman, K. (2019). Students' attentive fidelity for calculus instructional videos. In Otten, S., Candela, A. G., de Araujo, Z., Haines, C., & Munter, C. (Eds.). *Proceedings of the 41st annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 955-960) St. Louis, MO: University of Missouri.

Weinberg, A., Martin, J., Thomas, M., & Tallman, M. (2018). Failing to rewind: Students' learning from instructional videos. In Hodges, T. E., Roy, G. J., & Tyminski, A. M. (Eds.). *Proceedings of the 40th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1263-1266). Greenville, SC: University of South Carolina & Clemson University.

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Weinberg, A., Fulmer, E. F., Wiesner, E., & Barr, J. (2018). Didactical disciplinary literacy. In Weinberg, A., Rasmussen, C., Rabin, J., Wawro, M., & Brown, S. (Eds). *Proceedings of the 21st Annual Conference on Research in Undergraduate Mathematics Education* (pp. 1261-1269). San Diego, CA.

Wiesner, E., Weinberg, A., & Barr, J. (2017). Expert vs. novice reading of a calculus textbook: A case study comparison. In Weinberg, A., Rasmussen, C., Rabin, J., Wawro, M., & Brown, S. (Eds). *Proceedings of the 20th Annual Conference on Research in Undergraduate Mathematics Education* (pp. 1018-1025). San Diego, CA.

Weinberg, A., Wiesner, E., & Barr, J. (2016). Sense-making practices of expert and novice readers. In M. B. Wood, E. E. Turner, M. Civil, & J. A. Eli (Eds.), *Proceedings of the 38th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 97-104). Tucson, AZ, The University of Arizona.

Weinberg, A., & Thomas, M. (2016). Students' sense-making practices for video lectures. *Proceedings of the 19th Conference on Research in Undergraduate Mathematics Education* (pp. 1418-1424). Pittsburgh, PA: West Virginia University.

Weinberg, A., Wiesner, E., & Fukawa-Connelly, T. (2015). The narrative structure of mathematics lectures. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield, & H. Dominguez (Eds.), *Proceedings of the 37th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (pp. 1306-1313). East Lansing, MI: Michigan State University.

Weinberg, A. (2014) Characteristics of students' probabilistic reasoning in a simulation-based statistics course. In Makar, K., de Sousa, B., & Gould, R. (Eds.) *Proceedings of the 9th International Conference on Teaching Statistics.* International Association for Statistical Education. https://icots.info/9/proceedings/home.html

Weinberg, A. (2014) Exploring students' ways of thinking about sampling distributions. *Proceedings of the 17th Conference on Research in Undergraduate Mathematics Education,* (pp. 1151-1157). Denver, CO: Northern Colorado University.

Weinberg, A., Wiesner, E., & Fukawa-Connelly, T. (2013). Students' sense-making in mathematics lectures. *Proceedings of the 16th Conference on Research in Undergraduate Mathematics Education* (Volume 2, pp. 686-689). Denver, CO: Northern Colorado University.

Wiesner, E., Fukawa-Connelly, T., & Weinberg, A. (2013). Opportunity to learn from mathematics lectures. *Proceedings of the 16th Conference on Research in Undergraduate Mathematics Education,* (Volume 2, pp. 699-703). Denver, CO: Northern Colorado University.

Weinberg, A., Wiesner, E., & Fukawa-Connelly, T. (2012). A framework for analyzing mathematics lectures. In L. R. Van Zoest, 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. 383-386). Kalamazoo, MI: Western Michigan University.

Fukawa-Connelly, T., Weinberg, A., Wiesner, E., Berube, S., & Gray, K. (2012). Student note taking behavior in proof-based mathematics classes. *Proceedings of the 15th Conference on Research in Undergraduate Mathematics Education,* (pp. 425-429). Portland, OR: Portland State University. 2: 425-428.

Fukawa-Connelly, T., Weinberg, A., Wiesner, E., Berube, S., & Gray, K. (2012). The implied observer of a mathematics lecture. *Proceedings of the 15th Conference on Research in Undergraduate Mathematics Education,* (Volume 1, pp. 202-215). Portland, OR: Portland State University.

Weinberg, A. (2010). The implied reader in calculus textbooks. In P. Brosnan, D. Erchick, & L. Flevares (Eds.), *Proceedings of the 32nd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (Volume 6, pp. 105-113). Columbus, OH: Ohio State University.

Weinberg, A. (2009). Students' mental models for comparison word problems. In S. L. Sward, D. W. Stinson, & S. Lemons-Smith (Eds.), *Proceedings of the 31st Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (Volume 5, pp. 709-717.) Atlanta, GA: Georgia State University.

Refereed Conference Proceedings (Peer-Reviewed Proposals)

Noll, J., Weinberg, A., Hancock, S., & Simpson, S. (2011). Exploring New Approaches to Statistics Instruction: An Investigation of Students' Developing Conceptions of Sampling Distributions and the Relationship to Statistical Inference. *The 7th Conference of The International Collaboration for Research on Statistical Reasoning, Thinking, and Literacy,* (pp. 126-148). Texel, The Netherlands: Utrecht University.

Weinberg, A. (2010). Undergraduate students' interpretations of the equals sign. *Proceedings of the 13th Conference on Research in Undergraduate Mathematics Education.* Raleigh, NC: North Carolina State University.
http://sigmaa.maa.org/rume/crume2010/Archive/Weinberg.pdf

Weinberg, A. (2009). How students use their textbooks: Reading models and model readers. In *Proceedings of the 12th Conference on Research in Undergraduate Mathematics Education.* Raleigh, NC: North Carolina State University.
http://sigmaa.maa.org/rume/crume2009/proceedings.html

Weinberg, A. (2007). New perspectives on the student-professor problem. In T. Lamberg & L. Wiest (Eds.), *Proceedings of the 29th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education,* (pp. 164-170). Lake Tahoe, NV: University of Nevada-Reno.

Weinberg, A. (2004). A semiotic framework for variables. In D. E. McDougall & J. A. Ross (Eds.). *Proceedings of the 26th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education,* (Volume 1, pp. 284-295). Toronto, ON: University of Toronto.

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Posters (Peer-Reviewed Proposals)

Investigating Student Learning and Sense-Making from Instructional Calculus Videos. Twenty-First Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. San Diego, CA, February 2018.

Instructor Gestures in Proof-Based Mathematics Lectures. 35th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Chicago, IL, November 2013.

Hands-On Activities For Developing Statistical Intuition. United States Conference on Teaching Statistics. Columbus, Ohio, June, 2009.

Undergraduates' Use of Mathematics Textbooks, with B. Benesh, T. Boester & E. Wiesner. 28th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Merida, Mexico, November 2006.

Children's Prior Knowledge of Letters Influences the Interpretation of Algebraic Expressions, with N. McNeill, M. Alibali & E. Knuth. Society for Research in Child Development Biennial Meeting. Atlanta, GA, April 2005.

Conference Proceedings (Editor)

Weinberg, A., Moore-Russo, D., Soto, H., & Wawro, M. (Eds.). (2019). *Proceedings of the 22nd Annual Conference on Research in Undergraduate Mathematics Education.* Oklahoma City, OK

Weinberg, A., Rasmussen, C., Rabin, J., Wawro, M., & Brown, S. (Eds.). (2018). *Proceedings of the 21st Annual Conference on Research in Undergraduate Mathematics Education.* San Diego, CA.

Weinberg, A., Rasmussen, C., Rabin, J., Wawro, M., & Brown, S. (Eds.). (2017). *Proceedings of the 20th Annual Conference on Research in Undergraduate Mathematics Education.* San Diego, CA.

Other Publications

Weinberg, A. & Martin, J. (2020). Creating and using videos for teaching math: Suggestions from the field. *MAA FOCUS, 40*(4), pp. 20-23.

Hauk, S., Weinberg, A., & Murphy, T. J. (2017, December). Making RUME for improving mathematics teaching and learning. *MAA FOCUS, 37*(6), pp. 12-14.

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Grants and Awards

External

National Science Foundation, Division of Undergraduate Education, IUSE: EHR program: *Collaborative Research: Investigating Student Learning and Sense-Making from Instructional Calculus Videos* (∼$300,000 across three institutions, $185,985 at Ithaca College) June, 2017–June, 2020; PI

Supplemental grant ($34,921), June, 2020–May, 2022; PI

National Science Foundation, Division of Undergraduate Education: *Ithaca College Noyce Scholarship Program* ($1,197,000), August 15, 2011–July 31, 2018; Co-PI

Internal

Faculty Development Grant: *Developing a Faculty Network for Designing Intellectual Need-Provoking Tasks* ($500), Spring, 2023.

Academic Project Grant: *Supporting Eye-Tracking Capabilities to Investigate Student Learning and Sense-Making from Instructional Calculus Videos* ($550), Spring 2018.

REACHE Grant: *Learning From Video Lectures* ($1560), Spring 2015

Academic Project Grant: *Flipped Classrooms: Explorations in Alternative Classroom Instruction* ($500), Spring 2014.

Academic Project Grant: *Describing Students' Conceptual Metaphors for Sampling Distributions* ($750), Fall 2012.

Academic Project Grant: *Developing Statistical Simulation Software: Supporting the Capacity for Cross-Institutional Research* ($750), Fall 2011.

Academic Project Grant: *Understanding the Development of Students' Conceptions of Sampling Distributions* ($750), Fall 2010.

Academic Project Grant: *Remediating the Student-Professor Problem* ($750), Fall 2008

Academic Project Grant: *Investigating Mathematics Students' Use of Textbooks* ($800), Fall 2007

Merit Awards

School of Humanities & Sciences Level II Dean Merit Award (Ithaca College)

- 2018
- 2008

Mathematics Department Merit Award (Ithaca College)

- 2017
- 2015
- 2013
- 2012
- 2010
- 2009
- 2008

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Invited Presentations

Play and Intellectual Need. Playful Mathematics Colloquium, the 45th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. November, 2022.

Provoking Intellectual Need for Calculus Concepts. University of Idaho Mathematics Education Seminar. November, 2021.

Student Learning from Instructional Calculus Videos. University of Oklahoma Mathematics Education Seminar. March, 2021.

Quantitative Reasoning and Intellectual Need: Design Principles for Instructional Materials. University of Northern Colorado Mathematics Education Seminar. November, 2020.

The Calculus Videos Project. University of Northern Colorado Mathematics Education Seminar. November, 2020.

Quantitative Reasoning and Intellectual Need: Design Principles for Instructional Materials. MIT Electronic Mathematics Education Seminar. October, 2020.

The Calculus Videos Project: Theoretical Design Principles for Supporting Students' Learning from Instructional Videos. SIGMAA on RUME Virtual Invited Paper Session. July, 2020.

Exploring Active Learning Strategies in Quantitative Courses. NYU SPS Teaching and Learning Symposium. New York City, NY, October, 2019.

Characteristics of Students' Probabilistic Reasoning in a Simulation-Based Statistics Course. The 9th International Conference on Teaching Statistics. Flagstaff, AZ, July, 2014.

Seeing Through Symbols: Personal and Cultural Semiotic Systems in Algebra. The National Meeting of the American Association of Physics Teachers. Omaha, NE, July, 2011.

Frameworks for Understanding Undergraduate Students' Conceptions of the Equals Sign. The Joint Mathematics Meetings of the American Mathematical Society and Mathematical Association of America. New Orleans, LA, January, 2011.

Process-Object Frameworks and Mediating Metaphors. Harvard Mathematics Department Teaching Seminar, Cambridge, MA, December, 2005.

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Contributed Presentations and Colloquia

2022 *A Framework for Designing Intellectual Need-Provoking Tasks.* Twenty-Fourth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. Boston, MA, March 2022.

Observing Intellectual Need in Online Instructional Tasks. Twenty-Fourth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. Boston, MA, March 2022.

2021 *The Effects of Instructors and Student Activity in Learning from Instructional Calculus Videos.* Forty-Third Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Philadelphia, PA, October 2021.

2020 *A Theorization of Learning Environments to Support the Design of Intellectual Need-Provoking Tasks in Introductory Calculus.* Twenty-Third Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. Boston, MA, March 2020.

2019 *"Agency" in Didactical Disciplinary Literacy: Using a New Theory to Interpret Reading Interviews of a College Calculus Textbook.* Sixty-Ninth Annual Conference of the Literacy Research Association. Tampa, FL, December 2019.

Identifying Students' Attentive Fidelity for Calculus Instructional Videos. Forty-First Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. St. Louis, MO, November 2019.

Designing Intellectual Need-Provoking Tasks. Fall Meeting of the Seaway Section of the Mathematical Association of America. Ithaca, NY, November 2019.

2018 *Failing to Rewind: Students' Learning from Instructional Videos.* 40th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Greenville, SC, November 2018.

Didactical Disciplinary Literacy. Twenty-First Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. San Diego, CA, February 2018.

2017 *Expert vs. Novice Reading of a Calculus Textbook: A Case Study Comparison.* Twentieth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. San Diego, CA, February 2017.

2016 *Sense-making practices of expert and novice readers.* 38th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Tucson, AZ, November 2016.

Students' Sense-making Practices for Video Lectures. Nineteenth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. Pittsburgh, PA, February 2016.

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2015 *The Narrative Structure of Mathematics Lectures.* 37th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Lansing, MI, November 2015.

2014 *Exploring Students' Ways of Thinking About Sampling Distributions.* Seventeenth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. Denver, CO, February 2014.

2013 *Students' Sense-Making in Mathematics Lectures.* Sixteenth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. Denver, CO, February 2013.

Opportunity to Learn From Mathematics Lectures. Sixteenth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. Denver, CO, February 2013.

2012 *A Framework for Analyzing Mathematics Lectures.* 34th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education Annual Meeting. Kalamazoo, MI, November 2012.

A "Framework" for Analyzing the Readers of Proof-based Mathematics Lectures.. Fifteenth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. Portland, OR, February 2012.

From Tactile to Computer Simulation: An Intermediate Activity to Increase Understanding of Sampling Distributions. Joint Mathematics Meetings of the American Mathematical Society and Mathematical Association of America. Boston, MA, January 2012.

2011 *Making Sense of Qualitative Data.* United States Conference on Teaching Statistics, 2011. Cary, NC, May 2011.

2010 *The Implied Reader in Calculus Textbooks.* 32nd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education Annual Meeting. Columbus, OH, October 2010.

Studying Student Learning Trajectories for Sampling Distributions by Using Simulation Activities. The Joint Statistical Meetings. Vancouver, BC, August 2010.

Undergraduate Students' Interpretations of the Equals Sign. Thirteenth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. Raleigh, NC, February 2010.

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2009 *Students' Mental Models For Comparison Word Problems.* 31st Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education Annual Meeting. Atlanta, GA, September 2009.

Reading Models and Model Readers. Twelfth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education. Raleigh, NC, February 2009.

Designing and Assessing Hands-On Statistics Activities: The Central Limit Theorem and Hypothesis Testing. Joint Mathematics Meetings of the American Mathematical Society and Mathematical Association of America. Washington, DC, January 2009.

2008 *Designing and Assessing Hands-on Statistics Activities.* Mathematical Association of America Seaway Section Meeting. Syracuse, NY, April 2008.

Linking College Courses to the Secondary School Curriculum. Association of Mathematics Teacher Educators Twelfth Annual Conference, Tulsa, OK, January 2008.

2007 *New Perspectives On the Student-Professor Problem.* 29th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Lake Tahoe, Nevada, October 2007.

The Student-Professor Problem and Mathematics Education. Ithaca College Mathematics Education Seminar, October 2007.

How Your Students Use Their Textbook: A Preliminary Report, with B. Benesh, T. Boester & E. Wiesner. Joint Mathematics Meetings of the American Mathematical Soceity and Mathematical Association of America. New Orleans, LA, January 2007.

2006 *How Your Students Use their Textbook.* Ithaca College Mathematics Department Colloquium, Ithaca, NY, December 2006.

How Your Students Use their Textbook. Cornell University Educational Mathematics Seminar, Ithaca, NY, November 2006.

Reconceptualizing Mathematical Objects as Mediating Discursive Metaphors. Ninth Annual Meeting of the Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education, Piscataway, NJ, February 2006.

2005 *Undergraduate Calculus Students' Discourse About Functions.* Cornell University Educational Mathematics Seminar, Ithaca, NY, December 2005.

Implementing Lesson Study at the Undergraduate Level, with B. Benesh & E. Wiesner. Joint Mathematics Meetings of the American Mathematical Society and Mathematical Association of America. Atlanta, GA, January 2005.

2004 *A Semiotic Framework for Variables.* 26th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Toronto, Ontario, October 2004.

Students' Initial and Developing Conceptions of Variables. American Educational Research Association 2004 Annual Meeting. San Diego, CA, April 2004.

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Courses Taught

Ithaca College

Math 100, *Mathematics Fundamentals*
Math 101, *Math Boost*
Math 111, *Calculus 1*
Math 132, *Dynamic Functions*
Math 144, *Statistics for Business, Economics and Management*
Math 145, *Statistics for the Health, Life, and Social Sciences*
Math 152, *What is Mathematics?*
Math 153, *Mathematics as a Cultural Institution*
Math 155, *Basic Statistical Reasoning*
Math 161, *Math in Society*
Math 165, *Quantifying Sustainability*
Math 216, *Statistical Analysis*
Math 220, *Mathematics for Childhood Education*
Math 231, *Linear Algebra*
Math 243, *Statistics*
Math 320, *Linking High School and College Mathematics*
Math 480, *Connections in Advanced Mathematics*
Math 502, *History of Mathematics*
Math 510, *Graduate Seminar in Mathematics*
Honors 20015, *Investigating the Nature of Mathematics*
IISP 105, *Exploring the Options*
Education 405 *Pedagogy & Practice for the Mathematics Teacher*

Independent Study, Capstone, Honors & Summer Scholar Mentoring

Summer 2019	Kellie Wainwright & Jamie Woodworth: *Investigating Student Learning From Calculus Videos*
Spring 2019	Jessica Tornai: *Analyzing Eye Tracking for Calculus Videos* Gabriella Pesce: *The History of Teaching Mathematical Concepts*
Fall 2018	Kim Newman: *Honors Thesis: Eye Tracking and Calculus Videos* Jessica Tornai: *Covariational Reasoning and Qualitative Data Analysis*
Summer 2018	Kim Newman: *Investigating Student Learning From Calculus Videos*
Spring 2018	Connor Carroll: *The History of Teaching Mathematical Concepts*
Spring 2012	Kevin Litwin: *Introduction to Mathematical Proofs*
Spring 2008	Denise Dyer: *Analyzing Data on Students' Understanding of Variables* Sara Shikowitz: *Exploring Elementary Mathematics*

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Service

Field

Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education [SIGMAA-RUME]

- Organizational Director 2016-2020
- Conference on RUME Program Committee 2010-2020
- Mentoring Committee, 2020
- Secretary 2014-2016
- Nomination Committee, 2007

Mathematical Association of America Committee on the Annie and John Selden Prize, 2021-Present

Journal Reviewer:

- International Journal for Research in Undergraduate Mathematics Education
- International Journal of Mathematical Education in Science and Technology
- Mathematical Thinking and Learning
- Journal of Mathematical Behavior
- ZDM (The International Journal on Mathematics Education)
- Journal of Statistics Education
- PRIMUS
- Journal for Research in Mathematics Education

Conference Proceedings Reviewer:

- 2011 Annual Meeting of the American Educational Research Association (Division C, Section 3)
- SIGMAA-RUME Annual Conference Proceedings, 2005-Present
- North American Chapter of the International Group for the Psychology of Mathematics Education Annual Conference Proceedings, 2006, 2007, 2009, 2010, 2012, 2013, 2016, 2018, 2019, 2021

External Examiner

- PhD Thesis of Hassnaa Hasan Shaheed (University of Newcastle), December, 2019
- Honors Thesis of Andrew Meunier (Hobart & William Smith Colleges), November, 2007

College

Retention and Engagement Strategy Team (Chair, Academic Interventions Team), 2020-Present

CRM Steering Committee, 2021-2022

Canvas Analytics Task Group, 2021

School of Humanities & Sciences Faculty Senate, 2008-2014, 2015-2018

- Committee on Scholarship Statements, 2011-2014; 2015-2019
- Vice President, 2010-2012
- Executive Committee, 2009-2012

School of Humanities & Sciences Teacher Education Committee, 2005-2012

IC 20/20 Task Force 4 (Student Evaluation of Teaching), 2011

IC Peers Participant, 2009, 2010, 2012

Ithaca Today Session Leader/Participant, 2009, 2010, 2012, 2016, 2017, 2018

H&S Open House Participant, 2010, 2011, 2012, 2016

NCUR Moderator, 2011

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Department	Math Day Grader/Activity Planner, 2006-Present
	Curriculum Committee, AY 2015, AY 2017, AY 2022
	Yield Committee, AY 2021
	Assessment Committee, AY 2008-AY 2010, AY 2018, AY 2021
	Teaching Effectiveness Committee, AY 2020
	Anti-racism committee, 2020
	Search Committee, AY 2006, AY 2011, AY 2012 (Chair), AY 2015 (Chair), AY 2016, Spring 2019
	Calculus Working Group, 2015-2017
	Statistics Learning Goals Working Group, 2014-2016
	Classroom Renovation Committee, 2012-2015
	Quantitative Literacy Committee, 2012
	"Flexible Major" Committee, AY 2011
	Scholarship Statement Revision Committee, AY 2011
	Department Website Redesign Committee, AY 2011
	Recruitment and Retention Committee, AY 2010
	Planning Committee, 2010
	Service Course Committee, 2007-2008
Community	Community Math Day Organizer, 2022
	Fall Creek Elementary School Math Puzzlers, 2021
	Fall Creek Elementary School Math Professional Development, 2019