

Aaron D. Weinberg

CONTACT INFORMATION

Department of Mathematics
Ithaca College
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EMPLOYMENT

Associate Professor **Ithaca College**
Department of Mathematics 2011–Present

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

Part-time Assistant Professor **University of Georgia-Athens**
Department of Mathematics 2007
Taught mathematics content courses for pre-service early childhood teachers.

Consultant **University of Wisconsin-Madison**
SCALE Partnership 2006
Advised mathematics and curriculum & instruction departments on issues related to the mathematical training of pre-service elementary and middle-school teachers.

Teaching Assistant **University of Wisconsin-Madison**
Department of Mathematics 1999–2005
Taught “Arithmetical Problem Solving” and “Geometrical Inference and Reasoning” courses for pre-service elementary and middle-school teachers. Conducted recitation sessions for “Calculus and Analytic Geometry” and “Topics in Finite Mathematics.”

Project Assistant **University of Wisconsin-Madison**
Wisconsin Center for Education Research 2002–2005
Project assistant on “Transition from Arithmetic to Algebraic Reasoning,” a longitudinal study examining middle-school students’ development of algebraic concepts. Principal Investigators: Dr. Eric Knuth, Dr. Martha Alibali & Dr. Sharon Derry.

Fellow **University of Wisconsin-Madison**
K Through Infinity Systemic Initiative 2003–2004
Partner with Madison Metropolitan School District and high school mathematics teachers. Worked in high school classrooms and provided professional development focused on issues of teaching mathematics to diverse student populations.

EDUCATION

Ph.D., Mathematics with Specialty in Mathematics Education, August 2005
University of Wisconsin-Madison, Madison, WI
Dissertation Title: *A Framework For Analyzing Functions in Mathematical Discourse*
Advisor: Dr. Robert Wilson
Minor: Mathematics Education

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

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

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RESEARCH AREAS

Statistics Education

- Students' understanding of sampling distributions and simulation
- Development of students' informal inferential reasoning

Mathematics Textbooks and Reading

- Using reader-oriented theory to analyze mathematics textbooks

Algebraic Reasoning and Representation

- Students' personal and cultural semiotic systems in algebra
- Mental models for multiplicative comparison problems

PUBLICATIONS IN PEER-REVIEWED JOURNALS

Weinberg, A., Wiesner, E., Benesh, B., & Boester, T. (2011). Undergraduate students' self-reported use of mathematics textbooks. *PRIMUS*.

Weinberg, A., & Wiesner, E. (2011). Understanding mathematics textbooks through reader-oriented theory. *Educational Studies in Mathematics* 76 (1), 49-63.

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.

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

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

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.

Loepp, S., & Weinberg, A. (2001). Generic formal fibers of polynomial rings. *Journal of Pure and Applied Algebra*, 163(1), 93-106.

PEER-REVIEWED CONFERENCE PROCEEDINGS

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

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*, 5, 709-717.

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*. Texel, The Netherlands: Utrecht University.

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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/Abstracts2010.htm>

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*, 164-170.

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*, 1, 284-295.

POSTERS (PEER-REVIEWED PROPOSALS)

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

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.

INVITED TALKS

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.

CONTRIBUTED TALKS AND COLLOQUIA

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

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.

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.

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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.

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.

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 Society and Mathematical Association of America. New Orleans, LA, January 2007.

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.

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.

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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PROFESSIONAL DEVELOPMENT (FACILITATOR)

This Little Piggy Teaches Probability, CAUSE Webinar, November, 2010.
Investigating Variation Using Hands-On Activities, Mathematics for Secondary School Teachers Workshop, Cornell University, March, 2010.
Students' Success With Words and Symbols, COMPASS POINTS Annual Meeting, October 2006.
Master of Arts in Teaching Summer Workshop, Ithaca College, August 2006.
Algebra Students' Conceptions of Variables, Cornell Professional Development Day, March 2006.
Students' Misconceptions in Algebra 1, Madison Metropolitan School District, June 2004.

GRANTS AND AWARDS

National Science Foundation, Division of Undergraduate Education: *Ithaca College Noyce Scholarship Program* (\$1,197,000), August 15, 2011–July 31, 2016; Co-PI
Academic Project Grant (Ithaca College): *Developing Statistical Simulation Software: Supporting the Capacity for Cross-Institutional Research* (\$400), Fall 2011.
Mathematics Department Merit Award (Ithaca College), 2010
Academic Project Grant (Ithaca College): *Understanding the Development of Students' Conceptions of Sampling Distributions* (\$750), Fall 2010.
Faculty Development Award (Ithaca College): *Investigating Undergraduate Students' Conceptions of Mathematical Equality* (3-Credit Course Release), Fall 2010
Mathematics Department Merit Award (Ithaca College), 2009
Faculty Development Award (Ithaca College): *Designing a Mathematics Textbook for Pre-service Elementary Teachers* (3-Credit Course Release), Fall 2009
School of Humanities & Sciences Level II Dean Merit Award (Ithaca College), 2008
Mathematics Department Merit Award (Ithaca College), 2008
Academic Project Grant (Ithaca College): *Remediating the Student-Professor Problem* (\$750), Fall 2008
Faculty Development Award (Ithaca College): *Designing and Assessing Hands-on Statistics Activities* (3-Credit Course Release), Fall 2008
Academic Project Grant (Ithaca College): *Investigating Mathematics Students' Use of Textbooks* (\$800), Fall 2007
Faculty Development Award (Ithaca College): *A Cross-Sectional Investigation of Discourse in Mathematics* (3-Credit Course Release), Fall 2006

COURSES TAUGHT

ITHACA COLLEGE

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 216, *Introduction to Mathematical Statistics*
Math 220, *Mathematics for Childhood Education*

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Math 243, *Statistics*
Math 480, *Connections in Advanced Mathematics*
Math 502, *History of Mathematics*
Math 510, *Graduate Seminar in Mathematics*

UNIVERSITY OF
GEORGIA-ATHENS Math 5001, *Arithmetic Problem Solving*

UNIVERSITY OF
WISCONSIN-
MADISON Math 130, *Arithmetical Problem Solving*
Math 131, *Geometrical Inference and Reasoning*

STUDENT TEACHER SUPERVISION

SPRING 2006 Heather Byrne, Jeffrey Nadeau
FALL 2006 Jennifer Marro
FALL 2007 Audra Chapman, Tyler Dafinee, Ashley Houseknecht, Brian Sevey
SPRING 2008 Stela Anguelova, Brett Hotchkiss, Kayleigh Rose, Winsome Wade-Compton,
Kristopher Williamson
SPRING 2011 Brittney Clarke, Joseph Werner

INDEPENDENT STUDY MENTORING

SPRING 2008 Denise Dyer: *Analyzing Data on Students' Understanding of Variables*
Sara Shikowitz: *Exploring Elementary Mathematics*

SERVICE

COLLEGE School of Humanities & Sciences Faculty Senate Vice President, 2010-Present
School of Humanities & Sciences Faculty Senate Executive Committee, 2009-Present
School of Humanities & Sciences Faculty Senate, 2008-Present
School of Humanities & Sciences Teacher Education Committee, 2005-Present
IC Peers Participant, 2009, 2010
Ithaca Today Participant, 2009, 2010
NCUR Moderator, 2011

DEPARTMENT Assessment Committee, Fall 2008-Present
Recruitment and Retention Committee, Fall 2010-Present
Planning Committee, 2010
Mathematics Teacher Education Committee 2005-Present
Math Day Activity Planner, 2010, 2011
Recruitment Committee, 2006, 2011
Math Day Grader, 2006, 2008, 2009, 2011
Service Course Committee, 2007-2008
Calculus Working Group, 2006-2007

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FIELD	Reviewer, Journal of Statistics Education, 2010-Present Reviewer, PRIMUS, 2010-Present Reviewer, Journal for Research in Mathematics Education, 2007-Present Reviewer, 2011 Annual Meeting of the American Educational Research Association (Division C, Section 3) Reviewer, North American Chapter of the International Group for the Psychology of Mathematics Education Annual Conference Proceedings, 2006, 2007, 2009, 2010 SIGMAA on RUME, Conference on RUME Planning Committee 2010-Present SIGMAA on RUME Nomination Committee, 2007 Outside Examiner, Honors Thesis of Andrew Meunier (Hobart & William Smith Colleges), November, 2007
PROFESSIONAL ASSOCIATIONS	North American Chapter of the International Group for the Psychology of Mathematics Education, 2002-Present Mathematical Association of America, 2006-Present Mathematical Association of America SIGMAA on RUME, 2006-Present National Council of Teachers of Mathematics, 2006-Present American Mathematical Society, 1999-Present