

ALISON CASTRO SUPERFINE

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EDUCATION

2006	Ph.D.	University of Michigan, Ann Arbor. Major: Mathematics Education Dissertation: <i>Planning for mathematics instruction: A study of the teacher guide as a resource.</i>
2006	M.S.	University of Michigan, Ann Arbor. Major: Mathematics
2001	B.A.	University of California, Riverside. Major: Mathematics

ACADEMIC AND TEACHING APPOINTMENTS

2012-	Director, Office of Mathematics Education, Department of Mathematics, Statistics & Computer Science, University of Illinois at Chicago
2012-	Associate Professor, Department of Mathematics, Statistics & Computer Science, and Learning Sciences Graduate Program, University of Illinois at Chicago
2006-2012	Assistant Professor, Department of Mathematics, Statistics, & Computer Science, and Learning Sciences Graduate Program, University of Illinois at Chicago.
2005	Graduate Student Instructor: Mathematics Methods Course for Teaching Elementary Mathematics, University of Michigan, Ann Arbor.
2004-2005	Graduate Student Instructor: Mathematics Content Course for Preservice Elementary Teachers, University of Michigan, Ann Arbor.

2002-2006 Graduate Student Research Assistant: BI:FOCAL Project,
University of Michigan, Ann Arbor.

AWARDS AND FELLOWSHIPS

2011-2012 Teaching Recognition Program Award for outstanding performance in teaching activities, University of Illinois at Chicago's Council for Excellence in Teaching and Learning

2007-2008 Center for the Scholarship of School Mathematics Fellow - Education Development Center

RESEARCH FOCI

Design learning environments for preservice mathematics teacher education to support the development of mathematical knowledge for teaching

Design, implement and study the impact of videocases focused on children's mathematical thinking on preservice teachers' understanding of the mathematics needed for teaching

Explore the relationship between the design of mathematics curriculum materials and teachers' implementation

PUBLICATIONS: REFEREED JOURNAL ARTICLES

Castro Superfine, A., Li, W., & Bragelman, J. (under review). Examining preservice elementary teachers' performance on mathematical knowledge for teaching items. *Mathematics Teacher Educator*.

Castro Superfine, A., Marshall, A., & Kelso, C. (under review). Assessing how mathematics curriculum materials mediate teachers' implementation of the intended curriculum: An exploratory study. *School Science and Mathematics*.

Castro Superfine, A., & Pitvorec, K. (under review). Building a knowledge base for mathematics teacher education: Examining the role of one mathematics teacher educator's problems of practice. *Journal of Mathematics Teacher Education*.

Castro Superfine, A., & Li, W. (accepted). Developing mathematical knowledge for teaching teachers: A model for the professional development of teacher educators. *Issues in Teacher Education*.

Castro Superfine, A., Li, W., & Martinez, M. (2013). Developing preservice

- teachers' mathematical knowledge for teaching: Making explicit design considerations for a content course. *Mathematics Teacher Educator*, 2(1), 42-54.
- Martinez, M., & Castro Superfine, A. (2012). Integrating algebra and proof in high school: Students' work with multiple variables and a single parameter when conjecturing and proving. *Mathematical Thinking and Learning*, 14(2), 120-148.
- Martinez, M., Brizuela, B., & Castro Superfine, A. (2011). Integrating algebra and proof in high school: An exploratory study. *Journal of Mathematical Behavior*, 30, 30-47.
- Castro Superfine, A., Kelso, C., & Beal, S. (2010). Examining the practice of developing a research-based mathematics curriculum and its policy implications. *Educational Policy*, 24, 908-934.
- Marshall, A. M., Castro Superfine, A., & Canty, R. (2010). The case of Ms. Beyer: One teacher's strategies for making connections among representations in a first-grade classroom. *Teaching Children Mathematics*, 7(1), 38-47.
- Castro Superfine, A., & Wagreich, P. (2010). Developing mathematics knowledge for teaching in a content course: A design experiment involving mathematics educators and mathematicians. In D. Mewborn (Ed.), *Scholarly practices and inquiry in the preparation of mathematics teachers* (pp. 15-27). San Diego, CA: Association of Mathematics Teacher Educators.
- Castro Superfine, A., Canty, R., & Marshall, A. (2009). Translating between representational systems: All-or-nothing or skill conglomerate. *Journal of Mathematical Behavior*, 28, 217-236.
- Castro Superfine, A. (2009). The "problem" of experience in mathematics teaching. *School Science and Mathematics*, 109(1), 7-19.
- Castro Superfine, A. (2008). Planning for mathematics instruction: A model of experienced teachers' planning processes in the context of a reform mathematics curriculum. *The Mathematics Educator*, 18(2), 11-22.
- Castro, A. (2007). Preparing elementary preservice teachers to use mathematics curriculum materials. *The Mathematics Educator*, 16(2), 14-24.
- Silver, E. A., Mills, V., Castro, A., & Ghouseini, H. (2006). Blending elements of lesson study and case analysis and discussion: A promising professional development synergy. In K. Lynch-Davis & R. L. Ryder (Eds.), *The work of mathematics teacher educators: Continuing the conversation* (pp. 117-132). San Diego, CA: Association of Mathematics Teacher Educators.

PUBLISHED CONFERENCE PROCEEDINGS (REFEREED)

- Fisher, A., & Castro Superfine, A. (2013, November). *Analyzing teacher instructional moves around high-level tasks: Implications for curriculum design*.
- Castro Superfine, A., & Li, W. (2013, November). *Connecting to teaching practice in mathematics content courses for elementary preservice teachers*.
- Castro Superfine, A., & Li, W. (2011, October). *Preservice elementary teachers' learning from videocases: Results from the VPEM project*. In Weist, L., & Lamberg, T. (Eds.). (2011). Proceedings of the 33rd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (pp. 523-531). Reno, NV: University of Nevada, Reno.
- Castro Superfine, A., & Li, W. (2010, October). *Informing instructional design: Examining elementary preservice teachers' strategies in a partitive quotient problem*. In Brosnan, P., Erchick, D., & Flevaris, L. (Eds.). (2010). Proceedings of the 32nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (pp. 995-1003). Columbus, OH: The Ohio State University.
- Canty, R. S., Castro Superfine, A., & Marshall, A. M. (2008, July). *Representing part-whole relations in diagrams*. In V. Sloutsky, B. Love, & K. McCrae (Eds.). (2008). Proceedings of the 30th Annual Conference of the Cognitive Science Society (p. 1377). Washington, DC: Cognitive Science Society.
- Castro, A., Brown, S., Pitvorec, K., & Ditto, C. (2007, October). *Fidelity of implementation: Teachers' instructional moves in the context of a standards-based curriculum*. In Lamberg, T., & Wiest, L. R. (Eds.). (2007). Proceedings of the 29th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (Vol. 2, pp. 513-520). Stateline (Lake Tahoe), NV: University of Nevada, Reno.
- Castro, A. (2006, November). *Understanding teachers' use of the teacher guide as a resource for mathematics instruction*. In S. Alatorre, J. Cortina, M. Saiz, & A. Mendez (Eds.), Proceedings of the 28th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education Group (Vol. 2, pp. 657-659). Merida, Mexico: Universidad Pedagógica Nacional.
- Castro, A. (2006, November). *Learning how to use mathematics curriculum materials in content and methods courses*. In S. Alatorre, J. Cortina, M. Saiz, & A. Mendez (Eds.), Proceedings of the 28th Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education Group (Vol. 2, pp. 750-752). Merida, Mexico: Universidad Pedagógica Nacional.

REFEREED CONFERENCE PAPERS, POSTERS AND PRESENTATIONS

- Castro Superfine, A., Lynn, J., Stoelinga, T., Martinez, M., Schneider, C., & Briars, D. (2013, April). *Supporting underprepared algebra students: Results from a design-based research program*. Invited presentation for the annual meeting of the National Council of Teachers of Mathematics Research Pre-session, Denver, CO.
- Castro Superfine, A., & Li, W. (2013, January). *Understanding the work of mathematics teacher educators*. Invited presentation for the annual meeting of the Association of Mathematics Teacher Educators, Orlando, FL.
- Castro Superfine, A., Fisher, & A., Crowther, A. (2012, April). *Understanding the nature of teachers' implementation of Intensified Algebra I*. In A. Castro Superfine (Chair), "Intensified Algebra: A Design-Based Research and Development Project for Double-Period High School Algebra." Invited symposium for the annual meeting of the American Educational Research Association, Vancouver, Canada.
- Castro Superfine, A. & Groza, G. (2012, February). *Preservice elementary teachers' noticing of children's mathematical thinking*. Invited presentation for the annual meeting of the Association of Mathematics Teacher Educators, Fort Worth, TX.
- Li, W. & Castro Superfine, A. (2012, February). *Becoming experts: Preservice teachers' learning to analyze children's thinking in a mathematics content course*. Invited presentation for the annual meeting of the Association of Mathematics Teacher Educators, Fort Worth, TX.
- Li, W., & Castro Superfine, A. (2011, October). *Gathering evidence as a support for noticing*. Poster presented at the 33rd annual meeting of the North American Chapter of the Psychology of Mathematics Education, Reno, Nevada.
- Marshall, A., Castro Superfine, A., & Canty, R. (2009, April). *From one representation to another: Improving students' representational competence*. Invited presentation for the annual meeting of the National Council of Teachers of Mathematics, Washington, DC.
- Rivette, K., & Castro, A. (2008, January). *Questioning in elementary mathematics classrooms*. Invited presentation for the annual meeting of the Metropolitan Mathematics Club of Chicago, Des Plaines, IL.
- Teitlebaum, J., Castro, A., & Teitlebaum, M. (2007, June). *Making connections*. Invited presentation for the Institute for Mathematics Education, University of Arizona, Tucson, AZ.
- Castro, A. (2007, April). *Understanding teachers' use of the teacher guide as a resource for mathematics instruction*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

- Castro, A., & Brown, S. (2007, February). *Why do teachers need a rich understanding of number: Lessons learned from teachers' use of Standards-based whole number lessons*. Invited presentation for the annual meeting of Research in Undergraduate Mathematics Education, San Diego, CA.
- Castro, A. (2006, September). *Thinking about practice in the mathematics classroom: How do teachers' moves and decisions impact students' mathematical understanding?* Invited address, University of Illinois at Chicago Math Forum, Chicago, IL, September 27, 2006.
- Silver, E., Mills, V., Castro, A., & Ghouseini, H. (2006, April). *Conceptualizing the integration of two practice-based approaches to teacher professional development*. Paper presented at the annual meeting of American Educational Research Association, San Francisco, CA.
- Silver, E., Mills, V., Gosen, D., Clark, L., Castro, A., Ghouseini, H., & Strawhun, B. (2006, March). *Moving beyond implementation: Teachers working collaboratively to refine their practice*. Invited presentation for the annual meeting of the National Council of Supervisors of Mathematics, St. Louis, MO.
- Roberts, S., Williams, N., Castro, A., & Kulik, N. (2006, January). *Supporting culturally responsive practice through a community service-learning field experience*. Invited presentation for the annual meeting of the American Association of Colleges of Teacher Education, San Diego, CA.
- Castro, A. (2006, January). *Preparing elementary preservice teachers to use mathematics curriculum materials*. Invited presentation for the annual meeting of the American Association of Colleges of Teacher Education, San Diego, CA.
- Castro, A. (2006, January). *Preparing elementary preservice teachers to use mathematics curriculum materials*. Invited presentation for the annual meeting of the Association of Mathematics Teacher Educators, Tampa, FL.
- Silver, E., Mills, V., Castro, A., Charalambous, C., & Strawhun, B. (2006, January). *An iterative and adaptive approach to professional development*. Invited presentation for the annual meeting of the Association of Mathematics Teacher Educators, Tampa, FL.
- Ball, D., Bass, H., Sztajn, P., McMahon, T., Coffey, D., Sleep, L., Castro, A., & Allen B. (2005, January). *The professional development of professional developers: Continuing to learn as mathematics teacher educators*. Invited presentation for the annual meeting of the Association of Mathematics Teacher Educators, Dallas, TX.
- Silver, E., Ghouseini, H., & Castro, A. (2005, January). *Blending elements of lesson*

- study with narrative case analysis and discussion: A promising professional development synergy.* Invited presentation for the annual meeting of the Association of Mathematics Teacher Educators, Dallas, TX.
- Castro, A., & Allen, B. (2005, January). *A novel practice-based approach to the professional development of teacher educators.* Invited presentation for the annual meeting of the Association of Mathematics Teacher Educators, Dallas, TX.
- McMahon, T., & Castro, A. (2005, March). *The professional development of professional developers: Continuing to learn as mathematics teacher educators.* Invited presentation for the annual meeting of Conversations with Colleagues, Lansing, MI.
- Castro, A. (2005, April). *Examining mathematics teachers' use of the teacher guide during planning.* Invited presentation for the annual meeting of the American Educational Research Association, Montreal, Canada.
- Silver, E., Mills, V., Ghousseini, H., Castro, A., & Stylianides, G. (2005, May). *Complementary approaches to mathematics teacher development: Integrating case analysis and lesson study in the BI:FOCAL Project.* Paper presented at the 15th annual meeting of the International Committee on Mathematics Instruction, Brazil.
- Castro, A. (2005, Summer). Using video to support preservice teacher learning in mathematics methods and content courses. In *Association of Mathematics Teacher Educators Connections Newsletter*, 14(3), 8 - 9.
- Gilbert, M., Castro, A., Gosen, D., & Silver, E. (2004, October). *Beyond implementation: Improving teachers' use of an innovative middle school mathematics curriculum.* Poster presented at the annual meeting of the North American Chapter of the Psychology of Mathematics Education, Toronto, Canada.
- Silver, E., & Castro, A. (2002, October). *Mathematics learning and teaching in rural communities: Some research issues.* Paper presented at the annual meeting of the Appalachian Collaborative Center for Learning, Assessment, & Instruction in Mathematics, OH.

REPORTS AND TECHNICAL REPORTS

- Superfine, B. M. & Castro Superfine, A. (2013). *Improving mathematics teacher preparation policy in Illinois.* Chicago, IL: Research on Urban Education Policy Initiative, University of Illinois at Chicago.

SERVICE: NATIONAL AND INTERNATIONAL

- 2013 Reviewer – Issues in Teacher Education
- 2012 Reviewer – Journal of the Learning Sciences
- 2013-2016 Member – AMTE Research on Mathematics Teacher Education Advisory Committee
- 2012 Reviewer – Mathematics Teacher Educator
- 2012-2013 Conference Co-chair and Coordinating Committee member – Psychology of Mathematics Education - North American Chapter annual conference 2013
- 2011 Reviewer – Curriculum Inquiry
- 2010 Conference Coordinating Committee member, International Conference of the Learning Sciences (ICLS) 2010
- 2009- Reviewer – Educational Policy
- 2009 Reviewer – NSF ITEST program
- 2009 Reviewer – NSF REESE program
- 2008- Reviewer – Journal of Teacher Education
- 2007- Reviewer – Cognition and Instruction
- 2007- Reviewer – School Science and Mathematics
- 2005 - Reviewer – The Mathematics Educator
- 2005 - Reviewer – American Educational Research Association
- 2005 - Reviewer – Psychology of Mathematics Education North American Chapter
- 2005- Reviewer – Association of Mathematics Teacher Educators

SERVICE: LOCAL EDUCATIONAL INSTITUTIONS

- 2006-2010 External Evaluator – Chicago Bilingual Mathematics Laboratory

Project, Illinois Board of Higher Education (IBHE): Developed data collection and evaluation instruments; conducted program evaluation and wrote final report to IBHE.

2010-2013 Member of Mathematics Working Group, Chicago Teacher Partnership Program, University of Illinois at Chicago – lead institution: Participate in cross-institutional course sequencing and planning, development of common assessment instrument for mathematics content courses.

SERVICE: UNIVERSITY OF ILLINOIS AT CHICAGO

2013 Member of UIC Langenberg Scholarship Committee: Review applicant information and applications; make recommendations to committee chair.

2013-2016 Member of UIC Senate: Exercise legislative functions in matters of educational policy, and propose amendments to University of Illinois Statutes.

2013-2016 Member of Literature, Arts & Sciences (LAS) Educational Policy Committee

2012- Director of the Office of Mathematics Education in the Department of Mathematics, Statistics and Computer Science: Oversee all aspects of mathematics education faculty and instructor teaching and course development and research activities.

2011-2013 Member of Learning Sciences Research Institute Advisory Board: Oversee institute management including budget, marketing, and personnel development.

2011- Member of Graduate Studies Committee, Department of Mathematics, Statistics and Computer Science: Coordinate course scope and sequence planning and syllabus development for the program's core courses; participate in all aspects of doctoral student recruitment, review of applicants, student evaluation, and development of program handbook and evaluation guides.

2006- Member of Graduate Studies Committee, Learning Sciences Graduate Program: Coordinate course scope and sequence planning and syllabus development for the program's core courses; participate in all aspects of doctoral student recruitment, review of applicants, student evaluation, and development of program handbook and evaluation guides.

2006- Member of Mathematics Education Committee, Department of Mathematics, Statistics and Computer Science: Participate in aspects of program planning, student recruitment, and course and student evaluation.

- 2006- Member of Doctor of Arts Committee, Department of Mathematics, Statistics and Computer Science: Coordinate course scope and sequence planning; participate in all aspects of doctoral student recruitment, review of applicants, student evaluation.
- 2006- Mathematics Education Study Group (MESG): Lead facilitator and active participant in bi-weekly seminar focused on reading and presenting scholarship in mathematics education; attended by graduate students and faculty from numerous UIC departments and several Chicago City Colleges.

CURRENT AND RECENT FUNDING

Improving Formative Assessment Practices: Using Learning Trajectories to Develop Resources that Support Teacher Instructional Practice and Student Learning in CMP2. National Science Foundation, DRK-12 Program, 2013-2017, \$3 million, (Principal investigator w/Jim Pellegrino, Susan Goldman & Mara Martinez).

Using Videocases to Develop Preservice Elementary Teachers' Ability to Notice Children's Mathematical Thinking. 2012-2013 UIC LAS Award for Faculty in the Natural Sciences, \$35,000, (Principal investigator).

Teaching Teachers: Developing Faculty Expertise in Supporting Preservice Elementary Teachers' Development of Mathematics Knowledge for Teaching. National Science Foundation, Transforming Undergraduate Education (TUES) Program: Type 1, 2011-2013, \$150,000, (Principal investigator with Philip Wagreich).

National Center for Cognition and Mathematics Instruction. Institute of Education Sciences. 2010-2015, \$1.3 million, (Senior researcher with Jim Pellegrino, Principal investigator).

A Library of High School Mathematics Teaching and Learning Videocases. National Science Foundation, Course, Curriculum, and Laboratory Improvement (CCLI) Program: Phase 1, 2010-2012, \$150,000, (Co-Principal investigator with Mara Martinez).

The Cognitive, Psychometric, and Instructional Validity of Curriculum-Embedded Assessments: In-depth Analyses of the Resources Available to Teachers Within Everyday Mathematics. Institute of Education Sciences, Goal 5, Topic 2, 2009-2012, \$1.9 million, (Co-Principal investigator with Jim Pellegrino, Susan Goldman, Lou DiBello, & William Stout).

An Architecture of Intensification: Building a Comprehensive Program for Struggling Students in Double-Period Algebra Classes. National Science Foundation, Discovery Research K-12 Program, 2009-2013, \$3.9 million, (Co-Principal

investigator with Jim Lynn, Susan Goldman, Jim Pellegrino, Linda Chaput, Uri Treisman, & Susan Hull).

Learning Mathematics from Practice: Developing Professional Teaching Cases for Preservice Content Courses. National Science Foundation, Course, Curriculum, and Laboratory Improvement (CCLI) Program: Phase 1, 2009-2011, \$150,000, (Principal investigator with Philip Wagreich).

Learning Mathematics Needed for Teaching. University of Illinois Curriculum and Instruction Grant, 2009-2010, \$4000, (Principal investigator).

Research and Revision of the TIMS/Math Trailblazers Elementary Mathematics Curriculum. National Science Foundation, Supplemental request, 2008-2010, \$320,000, (Co-Principal investigator with Cathy Kelso).

Research and Revision of the TIMS/Math Trailblazers Elementary Mathematics Curriculum. National Science Foundation, Instructional Materials Development, \$3.2 million, 2003-2008 (Co-Principal investigator with Cathy Kelso).

TEACHING EXPERIENCE

Practicum in Teaching Elementary School Mathematics (MTHT 589, UIC). Graduate level course designed for practicing teachers; course focuses on understanding mathematics in ways needed for teaching.

Algebra for Understanding (MTHT 465, MTHT 591, UIC). Graduate-level courses designed for practicing teachers as part of the Chicago Public Schools Algebra Initiative; course is first course in three-course sequence focusing on elementary algebraic concepts.

Seminar on Mathematics Curricula (MATH 591, UIC). Doctoral course focused on examining research on mathematics curricula from historical, contemporary and international perspectives.

Arithmetic and Algebraic Structures (MATH 140, UIC). Undergraduate mathematics content course for preservice elementary teachers focused on whole and rational numbers and operations, proportional reasoning and algebra topics.

Journal Club Seminar (LRSC 540, UIC). Doctoral course focused on critical review, analysis and discussion of new and recent journal publications in the Learning Sciences or related fields.

Introduction to the Learning Sciences (LRSC 500, UIC). Doctoral course providing in-depth study of current theoretical and empirical work on how people learn, particularly from the perspective of implications for instruction and the design of learning environments.

Change in Individuals and Organizations (LRSC 513, UIC). Doctoral course examining the relationship between processes of individual learning and change, and processes of organizational learning and change.

Foundations of Scientific Inquiry (LRSC 503, UIC). Doctoral course focused on understanding the philosophical foundations of scientific inquiry and how such inquiry relates to teaching and learning processes.

Mathematics for Elementary and Middle School Teachers (MATH 485, U of Michigan). Graduate level course for preservice teachers focused on whole and rational numbers and operations, proportional reasoning and algebra topics.

Teaching Children Mathematics (ED 411, U of Michigan). Undergraduate mathematics methods course for preservice elementary teachers aimed at development students' ability to use mathematics in teaching and promoting equity in mathematics learning.