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EDUCATION

- 1988 Ph.D. Michigan State University
Major: Curriculum, Teaching, and Educational Policy; Teacher Preparation and Staff Development. Minor: Mathematics Education.
Dissertation: *Knowledge and reasoning in mathematical pedagogy: Examining what prospective teachers bring to teacher education.*
- 1981 – 1983 Michigan State University
Undergraduate mathematics courses: algebra; calculus and analytic geometry, I, II, III; number theory.
- 1982 M.A. Michigan State University
Major: Teacher Education. Minors: Reading, mathematics education.
- 1976 B.A. Michigan State University
Majors: French and Elementary Education. Minor: Language Arts. Graduated with highest honor.

PROFESSIONAL EXPERIENCE

- 2011 – Research professor, Institute for Social Research, University of Michigan
- 2011 – Director, TeachingWorks, University of Michigan
- 2005 – 2016 Dean, School of Education, University of Michigan
- 2005 – William H. Payne Collegiate Professor in Education, University of Michigan
- 2004 – 2005 Director of Teacher Education, School of Education, University of Michigan
- 2000 – Arthur F. Thurnau Professor, University of Michigan
- 1996 – Professor, Educational Studies, University of Michigan
- 1991 – 1996 Associate professor, Department of Teacher Education, Michigan State University
- 1988 – 1991 Assistant professor, Department of Teacher Education, Michigan State University
- 1988 – 1992 Third and fourth grade mathematics teacher, Spartan Village School, East Lansing, MI
- 1975 – 1988 Elementary classroom teacher (grades 1–5), East Lansing Public Schools, East Lansing, MI

PROFESSIONAL WRITING

Selected Journal Articles

- Gadd, R., Wilkes, C., & Ball, D. L. (in preparation). How do we teach it? Transforming practice for use in practice-based teacher education.
- Shaughnessy, M., Selling, S. K., Garcia, N., & Ball, D. L. (under review). Learning to teach teaching: What knowledge and capabilities do mathematics teacher educators need and (how) can we support their development? *Teacher Education Quarterly*.
- Wilkes, C., Willis, A., & Ball, D. L. (under revision). "It is true because of Miah's proof": Agency, authority, and democratic community in the context of mathematics.
- Ball, D. L., & Bass, H. (revise and resubmit). Beyond "you can do it!": Developing mathematical perseverance in elementary school, *Cognition and Instruction*.
- Shaughnessy, M., Garcia, N. M., O'Neill, M. K., Selling, S. K., Willis, A. T., Wilkes, C. E., Salazar, S. B., & Ball, D. L. (accepted pending revisions). Assessing novices' skills in leading mathematics discussions. *Educational Studies in Mathematics*.
- Ball, D. L., Ben-Peretz, M. & Cohen, R. B. (2014). Records of practice and the development of collective professional knowledge. *British Journal of Educational Studies*, 62(3), 317–335.
- Phelps, G., Corey, D., DeMonte, J., Harrison, D., & Ball, D. L. (2012). How much English language arts and mathematics instruction do students receive? Investigating variation in instructional time. *Educational Policy*, 26(5), 631–662.
- Corey, D., Phelps, G., Ball, D. L., DeMonte, J., & Harrison, D. (2012). Explaining variation in instructional time: An application of quantile regression. *Educational Evaluation and Policy Analysis*, 34(2), 146–163.
- Charalambos, C. Y., Hill, H. C., & Ball, D. L. (2011). Prospective teachers' learning to provide instructional explanations: What does it look like and what might it take? *Journal of Mathematics Teacher Education*, 14(6), 441–463.
- Learning Mathematics for Teaching Project. (2011). Measuring the mathematical quality of instruction. *Journal of Mathematics Teacher Education*, 14(1), 25–47.
- Ball, D. L., & Forzani, F. M. (2011, Summer). Building a common core for learning to teach, and connecting professional learning to practice. *American Educator*, 35(2), 17–21, 38–39.
- Ball, D. L., & Forzani, F. M. (2010). Teaching skillful teaching. *Educational Leadership*, 68(4), 40–45.
- Ball, D. L., & Forzani, F. M. (2010). What does it take to make a teacher? *Phi Delta Kappan*, 92(2), 8–12.
- Thames, M. H. & Ball, D. L. (2010). What mathematical knowledge does teaching require? Knowing mathematics in and for teaching. *Teaching Children Mathematics*, 17(4), 220–225.
- Ball, D. L., & Forzani, F. M. (2009). The work of teaching and the challenge for teacher education. *Journal of Teacher Education*, 60(5), 497–511.
- Hill, H., & Ball, D. L. (2009). The curious—and crucial—case of mathematical knowledge for teaching. *Phi Delta Kappan*, 91(2), 68–71.

- Ball, D. L., Sleep, L., Boerst, T., & Bass, H. (2009). Combining the development of practice and the practice of development in teacher education. *Elementary School Journal*, 109, 458–476.
- Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education*, 59(5), 389–407.
- Hill, H., Blunk, M., Charalambous, C., Lewis, J., Phelps, G., Sleep, L., Ball, D. L. (2008). Mathematical knowledge for teaching and the mathematical quality of instruction: An exploratory study. *Cognition and Instruction*, 26(4), 430–511.
- Stylianides, A. J., & Ball, D. L. (2008). Understanding and describing mathematical knowledge for teaching: Knowledge about proof for engaging students in the activity of proving. *Journal of Mathematics Teacher Education*, 11, 307–332.
- Ball, D. L., Lewis, J., & Thames, M. H. (2008). Chapter 1: Making mathematics work in school. *Journal for Research in Mathematics Education, Monograph 14*, 13–201.
- Delaney, S., Ball, D. L., Hill, H. C., Schilling, S. G., & Zopf, D. (2008). "Mathematical knowledge for teaching": Adapting U.S. measures for use in Ireland. *Journal of Mathematics Teacher Education*, 11(3), 171–197.
- Hill, H., Ball, D. L., & Schilling, S. G. (2008). Unpacking "pedagogical content knowledge": Conceptualizing and measuring teachers' topic-specific knowledge of students. *Journal for Research in Mathematics Education*, 39(4), 372–400.
- Ball, D. L., & Forzani, F. M. (2007). What makes education research "educational"? *Educational Researcher*, 36(9), 529–540.
- Hill, H. C., Ball, D. L., Blunk, M., Goffney, I. M., & Rowan, B. (2007). Validating the ecological assumption: The relationship of measure scores to classroom teaching and student learning. *Measurement: Interdisciplinary Research & Perspective*, 5 (2), 107–118.
- Ball, D. L., Goffney, I. M., & Bass, H. (2005). The role of mathematics instruction in building a socially just and diverse democracy. *The Mathematics Educator*, 15(1), 2–6.
- Ball, D. L., Ferrini-Mundy, J., Kilpatrick, R. J., Milgram, J., Schmid, W., & Schaar, R. (2005). Reaching for common ground in K-12 mathematics education. *Notices of the American Mathematical Society*, 52(9), 1055–1058.
- Ball, D. L., Hill, H. C., & Bass, H. (2005). Knowing mathematics for teaching: Who knows mathematics well enough to teach third grade, and how can we decide? *American Educator*, 30(3), 14–17, 20–22, 43–46.
- Hill, H. C., Rowan, B., & Ball, D. L. (2005). Effects of teachers' mathematical knowledge for teaching on student achievement. *American Educational Research Journal*, 42(2), 371–406.
- Ball, D. L., & Rowan, B. (2004). Introduction: Measuring instruction. *Elementary School Journal*, 105(1), 3–10.
- Thames, M. H., & Ball, D. L. (2004). [Review of the book *Learning Discourse: Discursive Approaches to Research in Mathematics Education*, by C. Kieran, E. A. Forman, & A. Sfard]. *Mathematical Thinking and Learning*, 6(4), 421–433.
- Hill, H. C., Schilling, S. G., & Ball, D. L. (2004). Developing measures of teachers' mathematical knowledge for teaching. *Elementary School Journal*, 105(1), 11–30.

- Hill, H., & Ball, D. L. (2004). Learning mathematics for teaching: Results from California's mathematics professional development institutes. *Journal for Research in Mathematics Education*, 35(5), 330–351.
- Cohen, D., Raudenbush, S., & Ball, D. L. (2003). Resources, instruction, and research. *Educational Evaluation and Policy Analysis*, 25(2), 1–24.
- Cohen, D. K., & Ball, D. L. (2001). Making change: Instruction and its improvement. *Kappan*, 83(1), 73–77.
- Ball, D. L. (2000). Bridging practices: Intertwining content and pedagogy in teaching and learning to teach. *Journal of Teacher Education*, 51(3), 241–247.
- Ball, D. L., & Bass, H. (2000). [Review of the book *The Number Devil*, by H. M. Enzensberger]. *Notices of the American Mathematical Society*, 47(1), 51–56.
- Chazan, D. & Ball, D. L. (1999). Beyond being told not to tell. *For the Learning of Mathematics*, 19(2), 2–10.
- Price, J., & Ball, D. L. (1998). Challenges of liberatory pedagogy in mathematics and teacher education. *Theory Into Practice*, 37(4), 256–264.
- Ball, D. L. (1997). From the general to the particular: Knowing our students as learners of mathematics. *Mathematics Teacher*, 90(9), 732–737.
- Price, J., & Ball, D. L. (1997) “There's always another agenda”: Marshalling resources for mathematics reform. *Journal of Curriculum Studies*, 29(6), 637–666.
- Ball, D. L. & Wilson, S. W. (1996). Integrity in teaching: Recognizing the fusion of the moral and the intellectual. *American Educational Research Journal*, 33(1), 155–192.
- Ball, D. L. (1996). Teacher learning and the mathematics reforms: What do we think we know and what do we need to learn? *Phi Delta Kappan*, 77(7), 500–508.
- Ball, D. L., & Cohen, D. K. (1996). Reform by the book: What is—or might be—the role of curriculum materials in teacher learning and instructional reform? *Educational Researcher*, 25(9), 6–8, 14.
- Wilson, S. W., & Ball, D. L. (1996). Helping teachers meet the standards: New challenges for teacher educators. *Elementary School Journal*, 97(2), 121–138.
- Wilson, S. M., Peterson, P. L., Ball, D. L., & Cohen, D. K. (1996). Learning by all. *Phi Delta Kappan*, 77(7), 468–476.
- Ball, D. L. (1995). Blurring the boundaries of research and practice. *Remedial and Special Education*, 16(6), 354–363.
- Ball, D. L. (1995). Transforming pedagogy: Classrooms as mathematical communities. A response to Timothy Lensmire and John Pryor. *Harvard Educational Review*, 65(4), 670–677.
- Ball, D. L. (1993). With an eye on the mathematical horizon: Dilemmas of teaching elementary school mathematics. *Elementary School Journal*, 93(4), 373–397.
- Ball, D. L. (1992). Magical hopes: Manipulatives and the reform of mathematics education. *American Educator*, 16(2), 14–18, 46–47.

- Mosenthal, J., & Ball, D. L. (1992). Constructing new forms of subject matter instruction: Subject matter knowledge in inservice teacher education. *Journal of Teacher Education*, 43(5), 361–371.
- Ball, D. L., & Schroeder, T. L. (1992). Implementing the *Professional Standards for Teaching Mathematics*: Improving teaching, not standardizing it. *The Mathematics Teacher*, 85(1), 67–72.
- Ball, D. L. (1991). What's all this talk about "discourse"? *Arithmetic Teacher*, 39(3), 44–48.
- Ball, D. L. (1990). Breaking with experience in learning to teach mathematics: The role of a preservice methods course. *For the Learning of Mathematics*, 10(2), 10–16.
- Ball, D. L. (1990). Reflections and deflections of the policy: The case of Carol Turner. *Educational Evaluation and Policy Analysis*, 12(3), 263–275.
- Ball, D. L. (1990). Prospective elementary and secondary teachers' understandings of division. *Journal for Research in Mathematics Education*, 21(2), 132–144.
- Ball, D. L. (1990). The mathematical understandings that prospective teachers bring to teacher education. *Elementary School Journal*, 90(4), 449–466.
- Cohen, D. K., & Ball, D. L. (1990). Policy and practice: An overview. *Educational Evaluation and Policy Analysis*, 12(3), 347–353.
- Cohen, D. K., & Ball, D. L. (1990). Relations between policy and practice: A commentary. *Educational Evaluation and Policy Analysis*, 12(3), 249–256.
- Friel, S. N., Ball, D. L., Cooney, T. J., & Lappan, G. (1990). Envisioning change in the practice of mathematics teaching: The NCTM's *Professional Standards for Teaching Mathematics*. *School Science and Mathematics*, 90(6), 510–515.
- Ball, D. L. (1988). Unlearning to teach mathematics. *For the Learning of Mathematics*, 8(1), 40–48.
- Ball, D. L., & Feiman-Nemser, S. (1988). Using textbooks and teachers' guides: A dilemma for beginning teachers and teacher educators. *Curriculum Inquiry*, 18(4), 401–423.
- Ball, D. L., & McDiarmid, G. W. (1988). Research on teacher learning: Studying how teachers' knowledge changes. *Action in Teacher Education*, 10(2), 17–24.

Selected Book Chapters and Conference Proceedings

- Ball, D. L. (2017). Uncovering the special mathematical work of teaching. In G. Kaiser (Ed.), *Proceedings from the 13th International Congress of Mathematics Education* (pp. 11–34). New York: Springer.
- Shaughnessy, M., Ball, D. L., and Garcia, N. (2017). A laboratory approach to the professional development of elementary mathematics specialists. In M. B. McGatha and N.R. Rigelman (Eds.), *Elementary mathematics specialists: Developing, refining, and examining programs that support mathematics teaching and learning* (pp. 123–132). Charlotte, NC: Information Age Publishing.

- Shaughnessy, M., Garcia, N. M., Selling, S. K., & Ball, D. L. (2016). What knowledge and skill do mathematics teacher educators need and (how) can we support its development? *Proceedings of the Thirty-eighth Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. Tucson, AZ: University of Arizona.
- Shaughnessy, M., Boerst, T., & Ball, D. L. (2015). Simulating teaching: New possibilities for assessing teaching practice. *Proceedings of the Thirty-seventh Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. East Lansing, MI: Michigan State University.
- Selling, S. K., Shaughnessy, M., Willis, A., Garcia, N., O'Neill, M. K., & Ball, D. L. (2015). Standardized assessments of beginning teachers' discussion leading practice: Is it possible and what can we learn? *Proceedings of the Thirty-seventh Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*. East Lansing, MI: Michigan State University.
- Bass, H., and Ball, D. (2015). Helping students learn to persevere with challenging mathematics. In X. H. Sun, B. Kaur, & J. Novotna (Eds.), *Proceeding of ICMI STUDY 23: Primary mathematics study on whole number* (pp. 290–298). Macao, China: International Commission on Mathematical Instruction.
- Ball, D. L. & Hoover, M. (2014). Transforming research to transform mathematics instruction. In Y. Li, E. A. Silver, & S. Li (Eds.), *Transforming mathematics instruction: Multiple approaches and practices*, *Advances in Mathematics Education* (pp. 549–557). New York: Springer.
- Thames, M. H. & Ball, D. L. (2013). Making progress in mathematics education: Lessons learned—past, present, and future. In K. Leatham (Ed.), *Vital directions for mathematics education research* (pp. 15–44). New York: Springer.
- Lewis, J., & Ball, D. L. (2009). Defining the problem of equity in teaching elementary school mathematics. In D. Featherman, M. Hall, & M. Krislov (Eds.), *The next 25 years? Affirmative action and higher education in the United States and South Africa* (pp. 244–258). Ann Arbor, MI: University of Michigan Press.
- Ball, D. L., & Hill, H. C. (2008). Measuring teacher quality in practice. In D. H. Gitomer (Ed.), *Measurement issues and assessment for teaching quality*. (pp. 80–98). Thousand Oaks, CA: SAGE Publications.
- Ball, D. L., & Bass, H. (2008). The role of mathematics in education for democracy. In G. Fenstermacher (Series Ed.) & D. Coulter, & J. Wiens (Vol. Eds.), *Yearbook of the National Society for the Study of Education: Vol. 107 (1). Why do we educate in a democratic society?* (pp. 171–184). Malden, MA: Blackwell Publishing.
- Hill, H. C., Sleep, L., Lewis, J. M. & Ball, D. L. (2007). Assessing teachers' mathematical knowledge: What knowledge matters and what evidence counts? In F. K. Lester (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 111–155). Charlotte, NC: Information Age Publishing.
- Cohen, D. K. & Ball, D. L. (2007). Innovation and the problem of scale. In B. Schneider & S. McDonald (Eds.), *Scale-up in education: Ideas in principle (Volume 1)* (pp. 19–36). Lanham, MD: Rowman & Littlefield. An earlier draft of this paper was presented at a 2003 meeting (“Conceptualizing Scale-Up”), sponsored by the Data Research and Development Center of The University of Chicago, and supported by the National Science Foundation, in connection with the Interagency Research Initiative (IERI).

- Boaler, J., Ball, D. L., & Even, R. (2003). Preparing mathematics education researchers for disciplined inquiry: Learning from, in, and for practice. In A. Bishop & J. Kilpatrick (Eds.), *International handbook of mathematics education* (pp. 491–521). Dordrecht, Netherlands: Kluwer.
- Ball, D. L., & Bass, H. (2003). Toward a practice-based theory of mathematical knowledge for teaching. In B. Davis & E. Simmt (Eds.), *Proceedings of the 2002 Annual Meeting of the Canadian Mathematics Education Study Group* (pp. 3–14). Edmonton, AB: CMESG/GCEDM.
- Ball, D. L., & Bass, H. (2003). Making mathematics reasonable in school. In J. Kilpatrick, W. G. Martin, and D. Schifter (Eds.), *A research companion to Principles and Standards for School Mathematics* (pp. 27–44). Reston, VA: National Council of Teachers of Mathematics.
- Ball, D. L. (2002). What do we believe about teacher learning, and how can we learn with and from our beliefs? In D. S. Mewborn, P. Sztajn, D. Y. White, H. G. Wiegel, R. L. Bryant, & K. Nooney (Eds.), *Proceedings of the twenty-fourth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (Vols. 1–4) (pp. 3–19). Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education.
- Ball, D. L., Hoyles, C., Jahnke, H. N., & Movshovitz-Hadar, N. (2002). The teaching of proof. In *Proceedings for the International Congress of Mathematicians* (pp. 907–920). Beijing, China: Higher Education Press.
- Cohen, D. K., Raudenbush, S., & Ball, D. L. (2002). Resources, instruction, and research. In F. Mosteller & R. Boruch (Eds.), *Evidence matters: Randomized trials in education research* (pp. 80–119). Washington, DC: Brookings Institution Press.
- Ball, D. L. (2001). Teaching with respect to mathematics and students. In T. Wood & B. Scott Nelson (Eds.), *Beyond classical pedagogy: Teaching elementary school mathematics* (pp. 11–22). Hillsdale, NJ: Erlbaum.
- Ball, D. L., Lubienski, S., & Mewborn, D. (2001). Research on teaching mathematics: The unsolved problem of teachers' mathematical knowledge. In V. Richardson (Ed.), *Handbook of research on teaching* (4th ed.) (pp. 433–456). New York: Macmillan.
- Ball, D. L., & Bass, H. (2000). Interweaving content and pedagogy in teaching and learning to teach: Knowing and using mathematics. In J. Boaler (Ed.), *Multiple perspectives on the teaching and learning of mathematics* (pp. 83–104). Westport, CT: Ablex.
- Ball, D.L. (2000). Foreword. In M. K. Stein, M. S. Smith, M. A. Henningsen, & E. Silver, *Implementing standards-based mathematics instruction: A casebook for professional development* (pp. ix–xiv). New York: Teachers College Press.
- Ball, D. L. (2000). Working on the inside: Using one's own practice as a site for studying mathematics teaching and learning. In A. Kelly, & R. Lesh (Eds.), *Handbook of research design in mathematics and science education* (pp. 365–402). Dordrecht, Netherlands: Kluwer.
- Ball, D. L., & Bass, H. (2000). Making believe: The collective construction of public mathematical knowledge in the elementary classroom. In D. Phillips (Ed.), *Yearbook of the National Society for the Study of Education, Constructivism in Education* (pp. 193–224). Chicago: University of Chicago Press.

- Ball, D. L. (1999). Crossing boundaries to examine the mathematics entailed in elementary teaching. In T. Lam (Ed.), *Contemporary mathematics* (pp. 15–36). Providence: American Mathematical Society.
- Ball, D. L. & Cohen, D. K. (1999). Developing practice, developing practitioners: Toward a practice-based theory of professional education. In G. Sykes & L. Darling-Hammond (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 3–32). San Francisco: Jossey Bass.
- Ball, D. L. & Lampert, M. (1999). Multiples of evidence, time, and perspective: Revising the study of teaching and learning. In E. Lagemann & L. S. Shulman (Eds.), *Issues in education research: Problems and possibilities* (pp. 371–398). San Francisco: Jossey Bass.
- Lampert, M. & Ball, D. L. (1999). Aligning teacher education with contemporary K-12 reform visions. In G. Sykes & L. Darling-Hammond (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 33–53). San Francisco: Jossey Bass.
- Ball, D. L. (1997) What do students know? Facing challenges of distance, context, and desire in trying to hear children. In B. Biddle, T. Good, & I. Goodson (Eds.), *International handbook on teachers and teaching (Vol. II)* (pp. 679–718). Dordrecht, Netherlands: Kluwer Press.
- Ball, D. L. (1997). Developing mathematics reform: What don't we know about teacher learning—but would make good working hypotheses? In S. N. Friel & G. W. Bright (Eds.), *Reflecting on our work: NSF Teacher Enhancement in K-6 Mathematics* (pp. 77–111). Lanham, MD: University Press. (Previously published as Ball, D. L. (1995). *Developing mathematics reform: What don't we know about teacher learning—but would make good working hypotheses?* [Craft Paper 95–4]. East Lansing: Michigan State University, National Center for Research on Teacher Learning.)
- Comiti, C., & Ball, D. L. (1996). Preparing teachers to teach mathematics: A comparative perspective. In A. Bishop & C. Kreidt-Keitel (Eds.), *International handbook on mathematics education* (pp. 1123–1153). Dordrecht, Netherlands: Kluwer Press.
- Ball, D. L. (1995). Connecting to mathematics as part of learning to teach. In D. Schifter (Ed.), *What's happening in math class? Vol. 2: Reconstructing professional identities* (pp. 36–45). New York: Teachers College Press.
- Ball, D. L. (1993). Moral and intellectual, personal and professional: Restitching practice. In M. Buchmann & R. E. Floden, *Detachment and concern: Conversations in the philosophy of teaching and teacher education* (pp. 193–204). New York: Teachers College Press.
- Ball, D. L. (1993). Preface. In D. Schifter and C. Fosnot, *Reconstructing mathematics education: Stories of teachers meeting the challenge of reform* (pp. xi–xii). New York: Teachers College Press.
- Ball, D. L. (1993). Halves, pieces, and twos: Constructing representational contexts in teaching fractions. In T. Carpenter, E. Fennema, & T. Romberg, (Eds.), *Rational numbers: An integration of research* (pp. 157–196). Hillsdale, NJ: Erlbaum.
- Ball, D. L. & Rundquist, S. (1992). Collaboration as a context for joining teacher learning with learning about teaching. In D. K. Cohen, M. W. McLaughlin, & J. E. Talbert, (Eds.), *Teaching for understanding: Challenges for practice, research, and policy* (pp. 13–42). San Francisco: Jossey Bass.

- Ball, D. L. (1992). The permutations project: Mathematics as a context for learning about teaching. In S. Feiman-Nemser and H. Featherstone (Eds.), *Exploring teaching: Reinventing an introductory course* (pp. 18–33). New York: Teachers College Press.
- Ball, D. L. (1992). Teaching mathematics for understanding: What do teachers need to know about the subject matter? In M. Kennedy (Ed.), *Teaching academic subjects to diverse learners* (pp. 63–83). New York: Teachers College Press.
- Ball, D. L. (1991). Research on teaching mathematics: Making subject matter part of the equation. In J. Brophy (Ed.), *Advances in research on teaching: Teachers' subject matter knowledge and classroom instruction (Vol. 2)* (pp. 1–48). Greenwich, CT: JAI Press.
- Ball, D. L., & McDiarmid, G. W. (1990). The subject matter preparation of teachers. In W.R. Houston (Ed.), *Handbook of research on teacher education* (pp. 437–449). New York: Macmillan.
- McDiarmid, G. W., Ball, D. L., & Anderson, C. W. (1989). Why staying ahead one chapter doesn't really work: Subject-specific pedagogy. In M. Reynolds (Ed.), *The knowledge base for beginning teachers* (pp. 193–205). New York: Pergamon and the American Association of Colleges of Teacher Education.

Selected Papers and Technical Reports

- Ball, D. L. & Bass, H. (2009). *With an eye on the mathematical horizon: Knowing mathematics for teaching to learners' mathematical futures*. Paper prepared based on keynote address at the 43rd Jahrestagung für Didaktik der Mathematik held in Oldenburg, Germany, March 1–4, 2009.
- Stylianides, A. J. & Ball, D. L. (2004). *Studying the mathematical knowledge needed for teaching: The case of teachers' knowledge of reasoning and proof*. Paper prepared for the 2004 Annual Meeting of the American Educational Research Association, San Diego, CA, April 14, 2004.
- Ball, D. L. (2002, Summer). Knowing mathematics for teaching: Relations between research and practice. In *Mathematics and Education Reform Newsletter*, 14(3), 1–5.
- Rowan, B., Schilling, S. G., Ball, D. L., & Miller, R. (2001). *Measuring teachers' pedagogical content knowledge in surveys: An exploratory study*. (Research Note S-2) Consortium for Policy Research in Education, Study of Instructional Improvement. Ann Arbor: University of Michigan.
- Hill, H. C., Siegel, E., & Ball, D. L. (2001, April). *Validating mathematical content*. Paper presented at the annual meeting of the American Educational Research Association, Seattle, WA.
- Ball, D. L. (2001, February). *Developing a mathematically proficient public: What are the problems, what do we know about them, and what would it take to solve them?* Paper prepared for the Aspen Institute congressional conference on "Promoting Excellence in the New Economy: The Challenges to National Policy," St. Petersburg, Florida, February 16–19, 2001.
- Cohen, D. K., Raudenbush, S., Ball, D. L. (2000). *Resources, instruction, and research*. Working paper, Center for Teaching Policy. Seattle: University of Washington. (An earlier version of this paper was presented at the fall meeting of the American Academy of Arts and Sciences, October, 1999.)
- Ball, D. L., Camburn, E., Correnti, R., Phelps, G. & Wallace, R. (1999). *New tools for research on instruction: A web-based teacher log*. Working paper, Center for Teaching Policy. Seattle: University of Washington.

- Ball, D. L. & Cohen, D. K. (2000). *Challenges of improving instruction: A view from the classroom*. Washington, DC: Council of Basic Education.
- Cohen, D. K. & Ball, D. L. (1999). *Instruction, capacity, and improvement*. (CPRE Research Report No. RR-043). Philadelphia, PA: University of Pennsylvania, Consortium for Policy Research in Education.
- Darling-Hammond, L. & Ball, D. L. (1998). *Teaching for high standards: What policymakers need to know and be able to do*. Joint publication of the Consortium of Policy Research in Education and the National Commission on Teaching and America's Future, JRE-04.
- Ball, D. L. & Cohen, D. K. (1995, April). *What does the educational system bring to learning a new pedagogy of reading or mathematics?* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
- Chazan, D. & Ball, D. L. (1995). *Beyond exhortations not to tell: The teacher's role in discussion-intensive pedagogy*. (Craft Paper 95-2). East Lansing: Michigan State University, National Center for Research on Teacher Learning.
- Price, J., Ball, D. L., & Luks, S. (1995). *Marshaling resources for reform: District administrators and the case of mathematics*. (Research Report 95-2). East Lansing: Michigan State University, National Center for Research on Teacher Learning.
- Kennedy, M. M., Ball, D. L., & McDiarmid, G. W. (1993). *A study package for examining and tracking changes in teachers' knowledge* (Technical Series 93-1). East Lansing, Michigan: The National Center for Research on Teacher Education.
- Ball, D. L. (1992). *Implementing the NCTM standards: Hopes and hurdles*. (Issue Paper 92-2). East Lansing: Michigan State University, National Center for Research on Teacher Learning. (Commissioned paper prepared for conference on Telecommunications as a Tool for Educational Reform: Implementing the NCTM Standards. Aspen Institute, Wye Conference Center, Queenstown, MD.)
- Ball, D. L., Lampert, M., & Rosenberg, M. L. (1991, April). *Using hypermedia to investigate and construct knowledge about mathematics teaching and learning*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
- Ball, D. L., & Wilson, S. M. (1990). *Knowing your subject and learning to teach it: Becoming a mathematics teacher*. (Research Report 90-7). East Lansing: Michigan State University, National Center for Research on Teacher Learning.
- Lampert, M., & Ball, D. L. (1990). *Using hypermedia technology to support a new pedagogy of teacher education*. (Issue Paper 90-5). East Lansing: Michigan State University, National Center for Research on Teacher Education.

Books

- Even, R. & Ball, D. L. (Eds.). (2009). *The professional education and development of teachers of mathematics: The 15th ICMI study*. New York: Springer.
- Lampert, M. & Ball, D. L. (1998). *Teaching, multimedia, and mathematics: Investigations of real practice*. New York: Teachers College Press.

Articles in the Media or on Blogs

- Ball, D. L. (2015). We will pay for our lack of respect for teachers. *Michigan Radio*. Retrieved from <http://michiganradio.org/post/we-will-pay-our-lack-respect-teachers>.
- Ball, D. L. (2011). Can Teachers Make a Difference? *Huffington Post*. Retrieved from http://www.huffingtonpost.com/Deborah%20Loewenberg%20Ball/teachers-make-a-difference_b_817096.html.
- Ball, D. L. (2011). The Cost of Education Wars. *Huffington Post*. Retrieved from http://www.huffingtonpost.com/Deborah%20Loewenberg%20Ball/the-cost-of-education-war_b_801722.html.
- Ball, D. L. (2009) Force Teachers to Prove Skills. *Detroit News*. Retrieved from www.detnews.com/article/20090430/Force-teachers-to-prove-skills (archived).

SELECTED MAJOR PRESENTATIONS AND ADDRESSES (2009 – 2019)

- (2019, January). The work of communicating equitably at work. Workforce Education Initiative presentation, Ann Arbor, MI.
- (2018, November). Civil rights and education: (How) Can teaching contribute to the building of a just democratic society? Presentation at Fox Run, Novi, MI.
- (2018, November). (How) Can teaching disrupt racism and oppression? Hauben Distinguished Lecture at the College of William and Mary, Williamsburg, VA.
- (2018, July). (What) Does practice-based teacher education have to do with disrupting racism and oppression? Presentation at the Practice-based Teacher Education Workshop, Ann Arbor, MI.
- (2018, July). Ways to help our (grand)children learn. Invited faculty forum at Camp Michiganiana, Boyne City, MI.
- (2018, July). Five myths about good teaching—and contradictory evidence from research. Invited faculty forum at Camp Michiganiana, Boyne City, MI.
- (2018, June). The power of working on problems of practice with others. Keynote address at Wayne State University's Project REALM Lesson Study Conference, Detroit, MI.
- (2018, June). (How) Can teaching contribute to the building of a just democratic society? Presentation at the Summer Institutes' Boosting Teacher Performance Conference, Livonia, MI.
- (2018, June). Rising to the special responsibility of states for quality teaching. Presentation at the 2018 Southern Regional Education Board Annual Meeting and 67th Legislative Work Conference, Boca Raton, FL.
- (2018, June). Learning to do the work of teaching: Practice-based teacher education. Seminar at Universidad del Desarrollo, Santiago, Chile.
- (2018, June). The power of teaching in growing the next generation of Chileans. Invited presentation at XIX Seminario Calidad y Gestión en Educación, Santiago, Chile.
- (2018, June). The power of teaching: STEM education for a better world. Keynote address at Network of STEM Education Centers (NSEC) 2018 National Conference, Columbus, OH.

- (2018, June). (How) Can mathematics teaching disrupt racism and oppression? Plenary address at the National Inquiry-Based Learning Conference, Austin, TX.
- (2018, May). How well do we understand the role of mathematical knowing in teaching? Invited guest lecture at the University of Oslo, Oslo, Norway.
- (2018, May). Helping learners persevere in mathematics. Plenary address at the 2018 Holmboe Symposium, Oslo, Norway.
- (2018, May). (How) Can mathematics contribute to the building of a just democratic society? Plenary address at the 2018 Holmboe Symposium, Oslo, Norway.
- (2018, May). Beyond “stick with it”: Teaching children to persevere in mathematics. Keynote address at HMH Intervention Mathematics Summit, Boston, MA.
- (2018, April). Just dreams and imperatives: The power of teaching in the struggle for public education. Presidential Address at 2018 American Educational Research Association Annual Meeting, New York, NY.
- (2018, March). The power of transformative teaching to disrupt racism, marginalization, and inequity: The role of faculty as transformative leaders in the academy. Invited lecture in Eastern Michigan University's Michael G. Morris Endowed Chair Transformative Leadership Speaker Series, Ypsilanti, MI.
- (2018, March). What does it mean to be free in a world such as ours? Arthur F. Thurnau Professor speaker at the University of Michigan's 95th Annual Honors Convocation, Ann Arbor, MI.
- (2018, January). The (im)possibilities of teaching mathematics. Presentation at the Weizmann Institute of Science's symposium in honor of Professor Ruhama Even, Rehovot, Israel.
- (2018, January). Teaching mathematics in ways that disrupt patterns of inequity predominant in classrooms. Presentation at the Seventh International Conference to Review Research on Science, Technology, and Mathematics Education (epiSTEME 7), Mumbai, India (presented remotely).
- (2017, November). What is good teaching and how can licensure help move us toward more high-quality instruction? Presentation at the Southern Regional Education Board Teacher Preparation Commission Meeting, St. Pete Beach, FL.
- (2017, November). Stand up for the power of skillful teaching. Invited lecture of the Osher Lifelong Learning Institute Distinguished Lecture Series, Ann Arbor, MI.
- (2017, November). (How) Can teaching be a force for justice? Keynote address at ELMAC 20th Anniversary Conference, Ann Arbor, MI.
- (2017, November). (How) Can teaching be a force for justice? Inaugural lecture of the Rutgers Graduate School of Education's Advancing Excellence and Equity in Education Distinguished Lecture Series, New Brunswick, NJ.
- (2017, October). Raising the quality of beginning teaching: It's a window of opportunity for us. Keynote address at the Consortium of State Organizations for Texas Teacher Education Fall Teacher Education Conference, Corpus Christi, TX.

- (2017, September). (How) Will we work together at this moment in our country's history to ensure that beginning teachers are "learner-ready"? Keynote address at the CEEDAR Center Putting Research-to-Practice in Teacher Preparation: Learner Ready Day One Conference, Cromwell, CT.
- (2017, August). Suspended: The dynamics of discipline, race, and gender in schools. Invited faculty forum at Camp Michigania, Boyne City, MI.
- (2017, August). Raising the quality of beginning teaching: It's a window of opportunity. Invited faculty forum at Camp Michigania, Boyne City, MI.
- (2017, June). Addressing social justice and content learning through the practice of assigning competence. Keynote address at the Carnegie Learning MathCounts 2017 Summer Institute, Philadelphia, PA.
- (2017, June). Raising the quality of beginning teaching: It's a window of opportunity for us. Presentation at the 2017 Southern Regional Education Board Meeting and 66th Legislative Work Conference, New Orleans, LA.
- (2017, June). Addressing social justice and content learning through the practice of assigning competence. Presentation at the Summer Institutes' Education to Develop the Whole Student Conference, Okemos, MI.
- (2017, April). The power of education for science, technology, engineering, and mathematics and for justice and a better world for humanity. Keynote address at the Lower Mekong Initiative Frontiers of Science Education Symposium and Networking Session, Bangkok, Thailand.
- (2017, April). Uncovering the special mathematical work of teaching. Presentation at the 49th Annual National Council of Supervisors of Mathematics (NCSM) Conference, San Antonio, TX.
- (2017, March). Learning to do the work of teaching: "Practice-based" teacher education. Keynote address at the 2. Internationaler Kongress Lernen in der Praxis, Bochum, Germany.
- (2017, March). Disrupting patterns of inequity: What does it take to learn to see, hear, and call out children's competence? Presentation at the 2017 Annual Meeting of the American Association for Colleges of Teacher Education (AACTE), Tampa, FL.
- (2017, February). Building a just society through the power of skillful teaching. Presentation at Valparaiso University, Valparaiso, IN.
- (2016, December). Teacher licensure: In the interest of children. Lecture at Wingate College of Education, Netanya, Israel.
- (2016, December). Teaching mathematics to support the mathematical work of teaching. Workshop at Levinsky College of Education, Tel Aviv, Israel.
- (2016, December). Learning to do the work of teaching: Practice-based teacher education. Lecture at Levinsky College of Education, Tel Aviv, Israel.
- (2016, December). Intervening on patterns of inequity and underachievement (in math) by learning to see and build on students' resources. Presentation to the Teachers College Reading and Writing Project, New York, NY.
- (2016, November). Raising the quality of beginning teaching: An imperative for our nation and its future. Presentation at Towson University, Towson, MD.

- (2016, November). Improving students' learning: Keeping our feet on the accelerator and our eyes on the rear-view mirror. Presentation at the Professional Learning Collaborative Meeting, Washington, DC.
- (2016, October). Teaching mathematics to support the mathematical work of teaching. Keynote address at the Teaching Mathematics Content Courses (TeMaCC) 2016 Conference, Ann Arbor, MI.
- (2016, October). Progress in a vital quest: From content "knowledge" to "content-work of teaching." Presentation at the Learning to Teach Convening, Boston, MA.
- (2016, August). Learning to see, connect with, and build students' resources: Focusing on students by zooming in on the work of teaching. Keynote address at the North Carolina Math Summit, Cary, NC.
- (2016, August). What are ways to see and grow students' mathematical competence? "Formative assessment" and the work of teaching. Breakout session presentation at the North Carolina Math Summit, Cary, NC.
- (2016, August). Uncovering the special mathematical work of teaching. Invited presentation at the 2016 Mathematical Association of America (MAA) Project NExT Workshop, Columbus, OH.
- (2016, July). Uncovering the special mathematical work of teaching. Plenary lecture at the 13th International Congress on Mathematical Education (ICME), Hamburg, Germany.
- (2016, July). (w/ Heather Hill). Learning mathematics for teaching (LMT): History and research. Presentation at the 13th International Congress on Mathematical Education (ICME), Hamburg, Germany.
- (2016, June). (How) can Americans be good at math? Invited faculty forum at Camp Michigania, Boyne City, MI.
- (2016, June). Stand up for the power of skillful teaching. Invited faculty forum at Camp Michigania, Boyne City, MI.
- (2016, June). Raising the quality of beginning teaching: An Agenda for our nation's youth—and its future—but what will it take? Presentation to the University-School Partnerships for the Renewal of Educator Preparation (USPREP), Memphis, TN.
- (2016, May). Raising the quality of beginning teaching: An agenda for our nation's youth—and its future. Invited presentation at the Council of Chief State School Officers (CCSSO) Network for Transforming Educator Preparation (NTEP) Meeting, Kansas City, MO.
- (2016, May). Content knowledge for teaching: Examples from elementary mathematics. Webinar at the Educational Testing Service (ETS) 2016 Client Conference.
- (2016, April). The mathematical work of teaching. Webinar for Mathematical Sciences Research Institute (MSRI) Illustrative Mathematics Virtual Lecture Series.
- (2016, April). Content knowledge for teaching: How is it related to "pedagogical content knowledge"? Presentation at the Gates Foundation Initial Teacher Education Community of Practice Workshop (via web conference), London, England.
- (2016, April). With respect for K-12 teaching: A special need for teacher leadership. Invited presentation at the Council of Presidential Awardees in Mathematics (CPAM) Leadership Seminar, San Francisco, CA.

- (2016, April). Learning to see, connect with, and build students' resources. Presentation at the 48th Annual National Council of Supervisors of Mathematics (NCSM) Conference, Oakland, CA.
- (2016, April). High-leverage teaching practices: What is the core work of teaching, and what is required to learn it and to do it? Invited presentation at the Center for Educational Transformation (CET) Ed Perspectives Meeting, University of Northern Iowa, Cedar Falls.
- (2016, February). Safe to practice? Assessing beginning teachers with the National Observational Teaching Examination. Keynote at the Michigan School Testing Conference, Ann Arbor, MI.
- (2016, February). What do we see when we watch teaching? Presentation at the Mathematical Sciences Research Institute (MSRI) 2016 Critical Issues in Mathematics Education Workshop, Berkeley, CA.
- (2015, November). Preparing teachers for the mathematical work of teaching. Invited lecture at the VI Seminário Internacional de Pesquisa em Educação Matemática (SIPEM), Pirenópolis, Goiás, Brazil.
- (2015, October). What does it mean to be "safe to practice"? And what is advanced professional capability? Invited plenary at NEA Foundation's 9th Annual Cross-Site Convening, Washington, DC.
- (2015, June). Helping students to persevere with challenging mathematics. International Commission on Mathematics Instruction, Study 23. Macau, China.
- (2015, June). What does it take to prepare mathematics teachers for responsible entry-level practice? Presentation at the MTE-Partnership Annual Conference, Fullerton, CA.
- (2015, April). What would it take to build a system that could prepare mathematically and pedagogically skillful teachers at scale? Invited presentation at the Mathematical Sciences Research Institute's (MSRI's) policy workshop, Washington, DC.
- (2015, February). Raising the quality of teacher preparation: It's a window of opportunity. Invited plenary at the American Association of State Colleges and Universities' Academic Affairs Winter Meeting, New Orleans, LA.
- (2015, January). Supporting the high quality teaching of mathematics: Balancing the equation. Invited keynote at the Scholastic Mathematics Leadership Summit, San Francisco, CA.
- (2014, November). Developing great teaching: From responsible entry to advanced practice. Invited plenary at the Education Trust National Conference, Baltimore, MD.
- (2014, November). Why is skillful mathematics teaching so important and (how) could the U.S. supply it at scale? Hugo Rossi Lecture at the University of Utah, Salt Lake City, UT.
- (2014, October). Our young people can't be left to chance: Making responsible entry-level teaching the norm. Keynote address for the Education Writers Association, Detroit, MI.
- (2014, October). Our young people can't be left to chance: Making responsible entry-level teaching the norm. Plenary address at the Michigan Association of Colleges of Teacher Education (MACTE) Fall Conference, Saginaw, MI.
- (2014, June). Why good teaching is both unnatural and crucial, and what it would take to supply it at scale? Invited presentation for the Forum for the Future of Higher Education's Aspen Symposium, Aspen, CO.

- (2014, June). Developing teachers' mathematical knowledge for teaching. Invited presentation for the University of South Australia (via web conference).
- (2014, May). A curriculum and pedagogy to prepare teachers for responsible beginning practice. Invited presentation at the MOFET Institute, Tel Aviv, Israel.
- (2014, May). (For what and to whom) should teacher preparation hold ourselves accountable? Keynote address at the Educational Testing Services' Praxis Client Conference, Princeton, NJ.
- (2014, April). Teaching instead of requesting: What is involved in making complex mathematical work explicit? Invited major session at the National Council of Supervisors of Mathematics (NCSM) Annual Conference, New Orleans, LA.
- (2014, March). Making skillful teaching an entitlement: (How) could the U.S. do this? Dean's Distinguished Lecture at Harvard Graduate School of Education, Cambridge, MA.
- (2014, March). What does it mean to be "safe to practice"? And what is advanced professional capability? Invited presentation at the National Board for Professional Teaching Standards' Teaching & Learning Conference, Washington, DC.
- (2014, March). It's a moral imperative: Skillful teaching can't be left to chance. Invited presentation at the Albert Shanker Institute and American Federation of Teachers, Washington, DC.
- (2014, March). (For what and to whom) should teacher preparation hold ourselves accountable? Keynote address at the 66th Annual Meeting of the American Association of Colleges for Teacher Education (AACTE), Indianapolis, IN.
- (2014, January). Practices of using video records as a resource in teacher education. Invited presentation at the Weizmann Institute of Science, Rehovot, Israel.
- (2013, December). Supporting the high quality teaching of mathematics: Balancing the equation. Invited keynote at the Scholastic Mathematics Summit. Miami, FL.
- (2013, December). Building the teaching profession: A national imperative. Keynote address at the Network of Michigan Educators' Recognition Banquet, East Lansing, MI.
- (2013, November). It's a moral imperative: Skillful teaching can't be left to chance. Invited seminar at the Center for Research on Educational Opportunity, Institute for Educational Initiatives, University of Notre Dame, Notre Dame, IN.
- (2013, November). "Safe to practice" as the standard for licensure. Keynote address at the 2013 National edTPA Implementation Conference, San Diego, CA.
- (2013, October). Toward responsible beginning teaching. Billie Grace Goodrich Distinguished Lecture at the University of Tennessee, Knoxville, TN.
- (2013, October). It's a moral imperative: Skillful teaching can't be left to chance. Presentation at the University of Delaware College of Education and Human Development, Newark, DE.
- (2013, August). Great teachers aren't born, they're taught. Presentation at the Center for American Progress, Washington, DC.

- (2013, August). (How) can all children get great teaching? Keynote address at the Michigan Department of Education's Bureau of Assessment and Accountability Fall Conference, Saginaw, MI.
- (2013, July). How can we advance teaching? Improving students' learning through high-leverage practices of instruction. Keynote address at the Carnegie Foundation for the Advancement of Teaching's Pathways National Forum, Santa Cruz, CA.
- (2013, June). Putting American schools back to work: The Michigan model scales up. Presentation to the Wolverine Caucus, Lansing, MI.
- (2013, June). (How) can all children get great teaching? Keynote address at the 85th Annual National Association of State Directors of Teacher Education and Certification (NASDTEC) Conference, Austin, TX.
- (2013, May). Hopelessly American: The challenge of responsible democratic education. Invited colloquium at Stanford Graduate School of Education, Stanford, CA.
- (2013, April). (How) can all children get great teaching? Presentation at the National Board for Professional Teaching Standards' Board of Directors Meeting, Washington, DC.
- (2013, March). (How) can we assess teaching to support improvement in practice. Keynote address at the Tri-County Alliance for Public Education's Spring Meeting, Novi, MI.
- (2013, February). (How) can we assess teaching to support improvement in practice? Keynote address at the 52nd Annual Michigan State Testing Conference, Ann Arbor, MI.
- (2013, February). Teaching all students to be mathematically skillful: Balancing the equation. Invited keynote at the Scholastic Mathematics Summit, Vanderbilt University, Nashville, TN.
- (2012, November). Great teachers aren't born. They're taught. Keynote address to the National Council for Curriculum and Assessment and Marino Institute of Education, Dublin, Ireland.
- (2012, October). (How) Can all children get great teaching? Presentation at the University of Iowa, Iowa City, IA.
- (2012, September). Tackling inequity by teaching to teach: Focusing on high-leverage practices. Keynote address at the Fall 2012 CAEP Conference, Washington, D.C.
- (2012, September). The Common Core State Standards: Teaching to learn and learning to teach. Invited panel at the Society for Research on Educational Effectiveness, Washington, DC.
- (2012, July). Challenges of knowing mathematics for teaching in the United States. Invited presentation at the 12th Annual International Congress on Mathematical Education, Seoul, Korea.
- (2012, April). Teaching works. Keynote address at the Governor's Summit on Education in Michigan, Lansing, MI.
- (2012, April). Practicing the common core: What is the work of teaching? Invited presentation at the National Council of Supervisors of Mathematics (NCSM) Annual Conference, Philadelphia, PA.
- (2012, February). (How) Can mathematics teaching be taught? Invited address as the recipient of the Excellence in Teaching Award from the Association of Mathematics Teacher Educators, Fort Worth, Texas.

- (2011, November). Hopelessly American: The challenge of reforming education. Invited Brodie Lecturer, Bowdoin College, Maine.
- (2011, September). Great teachers are not born, they're taught. Invited keynote address to the Cotsen Foundation for the Art of Teaching annual professional meeting, Los Angeles, CA.
- (2012, July). Invited presentation at the summer meeting of the Chief State School Officers, Phoenix, AZ.
- (2011, June). Learning to teach something in particular. Invited keynote address at the annual meeting of the National Association of State Directors of Teacher Education and Certification. Sacramento, CA.
- (2011, May). (w/ Steven Farr and Pamela Grossman). Does teacher education have a future? Invited Cubberley lecture/panel, Stanford University, Palo Alto, CA.
- (2011, March). (w/ H. Bass). Knowing mathematics well enough to teach it: Mathematical knowledge for teaching (MKT). Invited colloquium, College of Education, University of Texas-Austin, Austin, TX.
- (2011, March). Supporting high-quality mathematics instruction. Presentation at the Scholastic Mathematics Leadership Summit, Boston, MA.
- (2011, February). Assessing teaching practice for learning and licensure. Invited Frank B. Womer lecture to the 51st Annual Michigan School Testing Conference, Ann Arbor, MI.
- (2011, February). "Scaling up" as a problem of education practice. Invited lecture at the Mandel Leadership Institute, Jerusalem, Israel.
- (2011, February). Knowing mathematics well enough to teach it: Mathematical knowledge for teaching (MKT). Invited presentation to the Israel Academy of Sciences and Humanities, Jerusalem, Israel.
- (2010, October). Supporting high-quality mathematics teaching. Presentation at the Scholastic Mathematics Leadership Summit, Boston, MA.
- (2010, September). The role of colleges of education in research-intensive universities. Invited address to opening meeting of the University of Georgia College of Education, Athens, GA.
- (2010, August). (w/ F. Forzani). Building a system for teacher training in the U.S. Presentation at the summer meeting of the State Higher Education Executive Officers (SHEEO), Providence, RI.
- (2010, July). The elephant in the room: Building a system for developing effective teachers. Presentation at the Summer Institute of the Council of Chief State School Officers (CCSSO), Minneapolis, MN.
- (2010, May). (w/ F. Forzani). Design problems in practice-centered teacher education. Presentation at the Annual Meeting of the American Educational Research Association (AERA), Denver, CO.
- (2010, April). Learning to do mathematics as a teacher. Presentation at the National Council of Supervisors of Mathematics (NCSM) Annual Conference, San Diego, CA.
- (2010, April). How can we get good teaching for all students? Presentation at the Scholastic Intervention Convention 2010, Boca Raton, FL.

- (2009, November). What can we gain by conducting disciplined inquiry into teaching practice? Presentation at the Association for the Study of Higher Education Annual Meeting, Vancouver, Canada.
- (2009, October). Expanding who is "good at math" from the beginning. Presentation at the Seyhan N. Ege Memorial Symposium, Ann Arbor, MI.
- (2009, October). Improving mathematics and science education: Making change work. Presentation at the inaugural event for the University of Utah's Center for Science and Mathematics Education, Salt Lake City, UT.
- (2009, June). The special work of knowing and doing mathematics in teaching. Invited keynote address to the annual meeting of the Association of Mathematics Educators of South Africa (AMESA), University of the New Free State, Bloemfontein, South Africa.
- (2009, June). Developing teachers' mathematical knowledge for teaching. Invited plenary session to the annual meeting of the Association of Mathematics Educators of South Africa (AMESA), University of the New Free State, Bloemfontein, South Africa.
- (2009, June). Making mathematics learnable in school: What is the work of teaching mathematics? Invited plenary address to the 3rd International Redesigning Pedagogy Conference, National Institute of Education, Singapore.
- (2009, May). Making progress in mathematics education: Lessons past, present, and future. Invited colloquium to the Department of Mathematics, Brigham Young University, Provo, Utah.
- (2009, April). (Why) should research universities have schools of education? Invited Spencer Lecture at the annual meeting of the American Educational Research Association, San Diego, CA.
- (2009, March). (w/ H. Bass). Mit einem Auge auf den mathematischen Horizont: Was der Lehrer braucht für die Zukunft seiner Schüler. Invited keynote address to the 43. Jahrestagung für Didaktik der Mathematik. Oldenburg, Germany. Also presented at the 2009 Curtis Center Mathematics and Teaching Conference, Department of Mathematics, University of California at Los Angeles (February 2009).
- (2009, February). Becoming a nation of mathematically literate people: What will it take? Invited keynote address to the 49th annual Michigan School Testing Conference, Ann Arbor, MI.

GRANTS AND FELLOWSHIPS

- Communicating Mathematically Across Difference in the Work of Teaching. National Science Foundation, \$944,969, 2018–2023. (Co-principal investigator with Maisie Gholson and Mark Hoover)
- Developing a "Low-Touch" Strategy for Supporting Teacher Educators in Implementing Practice-Based Teacher Education. Bill & Melinda Gates Foundation, Seattle, WA, \$670,000, 2018–2021. (Co-principal investigator with Francesca Forzani)
- Mathematics Methods Teacher Education Practice Fellowship. S. D. Bechtel, Jr. Foundation, San Francisco, CA, \$500,000, 2018–2019. (Co-principal investigator with Francesca Forzani)
- Assessing Content Knowledge for Teaching: Secondary Level English Language Arts and Mathematics. Carnegie Corporation of New York, \$500,000; 2016–2017. (Co-principal investigator with Francesca Forzani and Nicole Garcia.)

- Organizing to Learn Practice: Teacher Learning in Classroom-Focused Professional Development. National Science Foundation, \$1,360,042; 2016–2020. (Co-principal investigator with Meghan Shaughnessy and Nicole Garcia.)
- Mathematics Methods Teacher Education Practice Fellowship. S. D. Bechtel, Jr. Foundation, San Francisco, CA, \$250,000, 2017–2018. (Co-principal investigator with Francesca Forzani)
- Building MKT Assessment Items and Instructional Tasks to Build Intercommunity Capacity to Develop Teachers' MKT. National Science Foundation, \$2,996,550; 2015–2019. (Co-principal investigator with Mark Hoover.)
- Investigating Relationships Between Mathematical Knowledge for Teaching and High-Leverage Teaching Practices. National Science Foundation, \$1,499,331; 2015–2018. (Co-principal investigator with Timothy Boerst and Meghan Shaughnessy.)
- Strengthening the Quality, Design and Usability of Simulations as Assessments of Teaching Practice. National Science Foundation, \$449,906; 2015–2017. (Co-principal investigator with Meghan Shaughnessy and Timothy Boerst.)
- Investigating Simulations of Teaching Practice: Assessing Readiness to Teach Elementary Mathematics. National Science Foundation, \$449,827, 2013–2016. (Co-principal investigator with Meghan Shaughnessy and Timothy Boerst.)
- Building a Professional System for Entry to Beginning Teaching. The Leona M. and Harry B. Helmsley Charitable Trust, \$1,100,000; 2014–2016. (Co-principal investigator with Francesca Forzani.)
- Investigating Simulations of Teaching Practice: Assessing Readiness to Teach Elementary Mathematics. National Science Foundation, \$450,000; 2013–2015. (Co-principal investigator with Timothy Boerst, Meghan Shaughnessy, and Hyman Bass.)
- Measures of Effective Teaching Project Extension: Developing a Longitudinal Database and a Library of Practice. Gates Foundation, \$3,624,085; 2011–2013. (Co-principal investigator with Brian Rowan and Francesca Forzani.)
- Building Practical Infrastructure for Learning to Teach the Common Core: Video Exemplars, Curriculum Packages, and Assessments. Gates Foundation, \$1,999,999; 2012–2014. (Co-principal investigator with Francesca Forzani.)
- Contextual Research and Large Empirical Research—Developing the Theory of Mathematical Knowledge for Teaching (MKT) by Investigating its Nature, Measurement, and Growth. National Science Foundation, \$2,695,570; 2010–2014. (Co-principal investigator with Mark Thames and Laurie Sleep.)
- The Design of Research-in-Instruction Laboratories (RILabs) as a Foundation for Transforming Education Research. National Science Foundation, \$299,972; 2010–2012. (Co-principal investigator with Hyman Bass and Mark Thames.)
- Developing Teaching Expertise in Elementary Mathematics. Cisco Learning Institute, \$1.9 million; 2009–2011. (Co-principal investigator with Kara Suzuka and Tim Boerst.)
- Using Practice as a Site to Learn Mathematics for Teaching: Developing Materials, Approaches, and Professional Community. National Science Foundation, Teacher Professional Continuum, \$1.6 million; 2005–2010. (Co-principal investigator with Kara Suzuka.)

Design, Validation, and Dissemination of Measures of Content Knowledge for Teaching Mathematics. National Science Foundation, Mathematics-Science Partnerships Program, \$5 million; 2003–08. (Co-principal investigator with Heather Hill.)

Design, Validation, and Dissemination of Measures of Content Knowledge for Teaching Mathematics. National Science Foundation, Mathematics-Science Partnerships Program. \$250,000, 2002–03 (Co-principal investigator with Heather Hill.)

Learning Mathematics for Teaching. National Science Foundation, Research on Learning and Education program, \$1.8 million; 2002–2005. (Co-principal investigator with Heather Hill.)

Center for Proficiency in Teaching Mathematics, National Science Foundation, Centers for Teaching and Learning program, 2002–present. (Partner with University of Georgia, Co-principal investigator.)

Scaling Up Instructional Improvement, Interagency Educational Research Initiative. National Science Foundation, Department of Education, NICHD, \$4.2 million; 2002–2005). (Co-principal investigator with David K. Cohen.)

Developing a Practice-Based Theory of Mathematics Knowledge for Teaching. National Science Foundation, \$1.8 million; 2001–2004. (Co-principal investigator with Hyman Bass.)

Developing Measures of Instructional Improvement. Interagency Educational Research Initiative. National Science Foundation, Department of Education, NICHD, \$4.2 million; 1999–2003. (Principal investigator with co-principal investigators David K. Cohen and Brian Rowan.)

Crossing Boundaries: Probing the Interplay of Mathematics and Pedagogy in Elementary Mathematics Teaching. The Spencer Foundation, \$302,000; 1998–2000.

Study of Instructional Improvement. OERI, Department of Education (through subcontracts from the Consortium for Policy Research (CPRE); Center for the Study of Teaching and Policy (CSTP, University of Washington), and Atlantic Philanthropies; 1996–2005. (Co-principal investigator with David K. Cohen and Brian Rowan.)

Challenges of Teaching Mathematics for Understanding. National Academy of Education and Spencer Foundation Postdoctoral Fellowship, \$35,000; 1994–1996.

A Study of Mathematics Reforms in California Classrooms. National Science Foundation, \$2.25 million; 1992–1996. (Co-principal investigator with David K. Cohen, Penelope Peterson, and Suzanne Wilson.)

A Study of Subject-Matter Reforms in Michigan, California, and South Carolina. Carnegie Corporation and Pew Charitable Trust, \$900,000; 1992–1995. (Co-principal investigator with David K. Cohen, Penelope Peterson, and Suzanne Wilson.)

Communication In and About School Mathematics. National Science Foundation, \$1.7 million; 1992–1996. (Co-principal investigator with Magdalene Lampert).

Teaching Mathematics for Understanding: Case-Based Elementary Teacher Preparation. National Science Foundation, \$1.1 million; 1989–1992. (Co-principal investigator with Magdalene Lampert).

In addition, I was a senior researcher and study director in two OERI awards to the National Center for Research on Teacher Learning, Michigan State University, 1986–1995.

OTHER SELECTED PROFESSIONAL ACTIVITIES AND SERVICE (1998 – 2019)

- 2018 – Immediate Past President, American Educational Research Association.
- 2018 – Member, Education Advisory Committee, American Academy of Arts and Sciences.
- 2017 – 2018 President, American Educational Research Association.
- 2016 – 2017 President-elect, American Educational Research Association.
- 2015 – 2017 Member, Commission on the Future of Undergraduate Education. Appointed by the American Academy of Arts and Sciences.
- 2013 – 2018 Member, National Science Board. Appointed by President Barack Obama.
- 2012 – 2013 Chair, Michigan Council for Educator Effectiveness. Appointed by Governor Rick Snyder.
- 2010 – 2012 Member, National Board for Education Sciences. Appointed by President Barack Obama.
- 2009 – 2013 Member, External Visiting Committee, Educational Testing Service, Princeton, NJ.
- 2009 Member, External Visiting Committee, University of Pittsburgh School of Education.
- 2009 Chair, External Academic Program Review Committee, Department of Mathematics, University of Arizona.
- 2006 – 2017 Spencer Foundation Board of Directors. Member 2006 –; Vice-Chair, September 2008 – 2011; Chair 2012 – 2017.
- 2006 – 2008 Member of Presidential National Mathematics Advisory Panel. Appointed by Secretary of Education Margaret Spellings.
- 2003 – Member, Board of Trustees, Mathematical Sciences Research Institute, University of California, Berkeley. Chair of Education Committee of the Board.
- 2002 – 2005 Member, Provost's Faculty Advisory Committee, University of Michigan, Provost Paul Courant.
- 2002 – 2007 Member, Editorial Board, *Journal for Research in Mathematics Teacher Education*. Editor, Barbara Jaworksi.
- 2002 – 2006 Chair, (w/ R. Even). Teacher Education Study, International Commission on Mathematics Instruction.
- 2001 – 2003 Strategic Education Research Program, member of Instruction Panel. National Research Council.
- 2001 – 2004 Member-at-large, American Educational Research Association Council.
- 2000 – 2001 Member, University of Michigan Commission on the Undergraduate Experience.
- 1999 – 2003 Chair, Mathematics Study Panel, RAND project: Improving the Quality of Educational Research and Development.

- 1999 – 2000 Member, Commission on Improving U. S. Mathematics Education for the Twenty-first Century (Chair, Senator John Glenn). Appointed by the U. S. Secretary of Education Richard Riley.
- 1999 – 2003 Member, Editorial Board, *American Educational Research Journal*, Section on Teaching, Learning, and Human Development.
- 1999 – 2003 Member, Editorial Board, *Mathematics Thinking and Learning*, Editor, Lyn English.
- 1999 – 2005 Mandel Foundation for Jewish Education in North American, New York. (Gail Dorph, Director). Consultant to several ongoing projects focused on professional development and preservice teacher education in Jewish education.
- 1999 – 2000 Member, Mathematics Learning Study, National Research Council, National Academy of Sciences. (Study produced book, *Adding it Up: Helping Children Learn Mathematics*.)
- 1998 – 2003 Member of advisory staff, *Videocases in Professional Development Project*, Nanette Seago and Judith Mumme, Principal Investigators. Member of advisory staff.

SELECTED RECENT TEACHING

Undergraduate Courses (Non-Teacher Education)

EDUC 118: Schooling in a Multicultural Society
 PUBPOL 201 (Module 1): Teacher Quality: What It Is, Why it Matters, and How to Improve It

Undergraduate Courses (Teacher Education)

EDUC 406: Managing to Teach
 EDUC 411: Teaching Elementary School Mathematics
 EDUC 415: Children as Sense-Makers #2

Graduate Courses

EDUC 780: Research on Teaching
 EDUC 737: Content Knowledge for Teaching: Histories, Perspectives, and Methods
 EDUC 772: Policy Contexts of Teaching and Teacher Education
 EDUC 790/628 & PUBPOL 628: Social Foundations of Education

DOCTORAL STUDENTS

Current Doctoral Advisees

Karen Ahn
 Gabriele Bernal
 Anne Blais
 Andrea Cisneros
 Rosalie DeFino
 Susanna Farmer
 Keisha Ferguson
 Kolby Gadd
 Saba Gerami

Lauren Hickman
Joy Johnson
Lindsey Mann
Carolyn Masserang
Darrius Robinson
Alexandra Sherman
Amber Sizemore
Emily Theriault-Kimmey
William Waychunas
Charles Wilkes
Amber Willis

Completed Doctoral Dissertations

Michigan State University (9)

Carol Crumbaugh (1998)

"Yeah but I thought it would still make a square": A study of fourth-graders' disagreement during whole-group mathematics discussion

Current position: Associate Professor, Western Michigan University

Pamela Geist (1998)

Reforming mathematics teaching: Examining the relationship between instructional policy and a teacher's opportunities to learn

Current position: CEO, TEG Global

Janet Navarro (1997)

Reaching beyond the boundaries: Two teachers' collaborative experiences with change and learning in a professional development school

Current position: Affiliate Professor, Grand Valley State University

Sarah Lubienski (1996)

Mathematics for all? Examining issues of class in mathematics teaching and learning

Current position: Professor and Interim Associate Dean of Graduate Studies, Indiana University Bloomington

Janine Remillard (1996)

Changing texts, teachers, and teaching: The role of curriculum materials in mathematics education reform

Current position: Professor, University of Pennsylvania

Anthony Rickard (1993)

Teachers' use of a problem-solving oriented sixth-grade mathematics unit: Two case studies

Current position: Professor, University of Alaska-Fairbanks

Dirck Roosevelt (1998)

Fragility and endurance in children's writing and teaching as acts of attention

Current position: Associate Professor of Practice, Columbia University

Stephen Smith (1999)

Children, learning theory, and mathematics: An analysis of the role of language and representations in children's mathematical reasoning

Current position: Associate Professor, Northern Michigan University

Kara Suzuka (2005)
Cultivating unfamiliar terrains: A study of a pre-service elementary mathematics methods course designed for adaptation
Current position: Assistant Specialist, University of Hawaii at Manoa

University of Michigan (30)

Kristin Smith Alvarez (2016)
Feedback for teacher learning and the improvement of instruction: Conceptualization, preparation, and practice
Current position: Director of Research, Alder Graduate School of Education

Rhonda Cohen (2005)
Examining the work of constructing a representational context in elementary mathematics teaching
Current position: Intervention Specialist, Leverett Elementary School

Rachel Collopy (2000)
The educative potential of curriculum materials and their contribution to the learning of elementary mathematics teachers
Current position: Associate Professor, University of Dayton

Douglas Corey (2007)
Constructing and using a measure of teaching for mathematical proficiency
Current position: Associate Professor, Brigham Young University

Martha Curren-Preis (2017)
Creating and using the persona in teaching: Challenges of connection and control
Current position: Postdoctoral Fellow, TeachingWorks, University of Michigan

Seán Delaney (2008)
Adapting and using U.S. measures to study Irish teachers' mathematical knowledge for teaching
Current position: Registrar, Marino Institute of Education, Dublin, Ireland

Esther Enright (2016)
Teaching to "the good ones"? Examining the relationship between inequity and the practice of and preparation for postsecondary mathematics instruction
Current position: Assistant Professor, Boise State University

Rebecca Gadd (2018)
Developing novices' professional scripts for teaching: An investigation of teacher education practice
Current position: Boston University School of Education, Research Associate, Understanding How Elementary Teachers Take Up Discussion Practices to Promote Disciplinary Learning and Equity.

Imani Goffney (2010)
Identifying, measuring, and defining equitable mathematics instruction
Current position: Assistant Professor, University of Maryland

Delena Harrison (2012)
A comparison of two prominent instructional approaches to the teaching and learning of multi-digit computation
Current position: Research Analyst, University of Michigan

- Monica Hartman (2004)
Situating teacher learning in the practice of mathematics and science teaching
 Current position: Teacher, Caughlin Ranch Elementary School, Reno, NV
- Mark Hoover (2009)
Coordinating mathematical and pedagogical perspectives in practice-based and discipline-grounded approaches to studying mathematical knowledge for teaching (K-8)
 Current position: Associate Research Scientist, University of Michigan
- Yeon Kim (2012)
Teaching mathematical knowledge for teaching: Curriculum and challenges
 Current position: Assistant Professor, Silla University, South Korea
- Deidre Le Fevre (2002)
The work of designing video-based multimedia curriculum for learning teaching
 Current position: Senior Lecturer, University of Auckland, New Zealand
- Jennifer Lewis (2007)
Teaching as invisible work
 Current position: Associate Professor, Wayne State University and Executive Director of Educator Excellence, Detroit Public Schools Community District
- Shweta Naik (2018)
Teachers' encounters with horizon content knowledge: Investigating knowledge sensibilities for teaching mathematics
 Current position: Homi Bhabha Centre for Science Education, Mumbai, India
- Blake Noel (2018)
Good moves for bad habits: Interrupting normative teaching, disrupting racialized inequity
- Ravin Pan (2008)
Teaching algebra in an inner-city classroom: Conceptualization, tasks, and teaching
 Current position: Associate Professor, Sacramento State University
- Geoffrey Phelps (2005)
Content knowledge for teaching reading
 Current position: Managing Research Scientist, Education Testing Service
- Annick Rougée (2017)
How do secondary mathematics teachers manage student responses?
 Current position: Assistant Professor, Washington State University
- Sabrina Salazar (2018)
Examining institutional racism within mathematics instruction
 Current position: Assistant Professor, Universidade Federal de Pelotas (Brazil)
- Rohit Setty (2013)
Being explicit about modeling: A first person study in India
 Current position: Vice President & Principal, Setty & Associates International, PLLC
- Diana Sherman (2016)
Preservice elementary teachers' early practice of eliciting and responding to students' mathematical thinking
 Current position: Assistant Professor, Saint Anselm College

Helen Siedel (2010)

Mathematics textbooks for elementary teachers as a resource for teacher learning: The case of multiplication of integers

Current position: Independent Researcher and Consultant

Laurie Sleep (2008)

Teaching to the mathematical point: Knowing and using mathematics in teaching

Current position: Yoga Instructor

Rachel Snider (2016)

How mathematical knowledge for teaching intersects with teaching practices: The knowledge and reasoning entailed in giving explanations and selecting examples in secondary mathematics

Current position: Assistant Professor, College of New Jersey

Andreas Stylianides (2005)

Proof and proving in school mathematics instruction: Making the elementary grades part of the equation

Current position: Reader in Mathematics Education, University of Cambridge

Hui Kiang (Alison) Tan (2012)

Describing the complexities of field instruction practice: An exploratory case study in a university-based teacher education program

Current position: English Language Specialist, English Language Institute of Singapore

Edward Wall (2003)

Making sense: Listening, remembering, and facilitating in the elementary mathematics classroom

Current position: Assistant Professor Emeritus, City College of New York

Deborah Zopf (2010)

Mathematical knowledge for teaching teachers: The mathematical work of and knowledge entailed by teacher education

Current position: Instructor, Henry Ford Community College

AWARDS AND HONORS

Memberships and Fellowships in Honorary Societies

Fellow of the American Academy of Arts and Sciences, elected 2014.

Fellow of the American Educational Research Association, elected 2013.

Fellow of the American Mathematical Society, elected 2012.

Member of the National Academy of Education, elected 2007.

Awards

Felix Klein Medal for Lifetime Achievement in Mathematics Education Research. International Commission on Mathematics Instruction, International Mathematics Union, 2017.

Doctorate of Humane Letters. Lesley University, 2015.

Medal for Distinguished Service. Teachers College, Columbia University, 2015.

Edward Pomeroy Award for Outstanding Contributions to Teacher Education. American Association of Colleges for Teacher Education, 2014.

Education Research Award. Council of Scientific Society Presidents, 2013.

Excellence in Teaching Award. Association of Mathematics Teacher Education, 2012.

Distinguished Alumni Award, College of Education, Michigan State University, 2010.

Outstanding Article Published in *Journal of Teacher Education*, 2009.

Louise Hay Award for Outstanding Contributions to Mathematics Education. Association for Women in Mathematics, 2009.

Outstanding Contributions to Mathematics Education Award, Michigan Council of Teachers of Mathematics, 2008.

William H. Payne Collegiate Professorship in Education, University of Michigan, 2004 –.

Palmer O. Johnson Award for Best Article Published in an AERA Journal in 2003. American Educational Research Association, 2004.

Arthur F. Thurnau Professor. University of Michigan, 2000 –.

Raymond B. Cattell Early Career Award for Programmatic Research, American Educational Research Association, 1997.

Award for Outstanding Scholarship on Teacher Education. Association of Colleges and Schools of Education in State Universities and Land Grant Colleges and Affiliated Private Universities, 1990.

Outstanding Dissertation Award. College of Education, Michigan State University, 1989.

Doctoral Award for Academic Excellence. College of Education, Michigan State University. 1988.

Excellence-in-Teaching. Michigan State University, 1986.