

Douglas Lyman Corey

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EDUCATION

- 2007 Ph.D. University of Michigan
Major: Mathematics Education
Dissertation Topic: *Constructing and Using a Measure of Teaching
For Mathematical Proficiency*
Advisor: Deborah Loewenberg Ball
- 2004 M.A. University of Michigan
Major: Statistics
- 2001 M.A. Brigham Young University
Major: Mathematics
Minor: Statistics
Thesis Topic: *Comparing Traditional and Computer
Based Instruction Methods in College Algebra*
Advisor: Blake E. Peterson
- 1999 B.A. Brigham Young University
Major: Mathematics Education

AREAS OF STUDY AND INTEREST

International comparisons of educational practices; measuring mathematics instruction; knowledge of mathematics for teaching; mathematics teacher education; quantitative research methods; hierarchical linear models; college mathematics and statistics education.

PROFESSIONAL EXPERIENCE

- Aug 2013 – Present Associate Professor of Mathematics Education
Brigham Young University
- Teach undergraduate and graduate mathematics education courses. Teach undergraduate mathematics courses.
- March 2007 – Sept 2013 Assistant Professor of Mathematics Education
Brigham Young University
- Teach undergraduate and graduate mathematics education courses. Teach undergraduate mathematics courses.
- June 2006 – March 2007 Mathematics Education Instructor

Brigham Young University

Taught undergraduate mathematics education and mathematics courses.

- Aug 2001-June 2006 Graduate Student Research Assistant
Study of Instructional Improvement
Analyze large scale educational survey data. Model achievement and instruction using Hierarchical Linear Models (Mixed Models). Develop instructional scales. Collect and analyze qualitative instructional and program implementation data.
- Jan 2005-April 2005,
2001-2002 Graduate Student Instructor
University of Michigan Teacher Education Program
Introduce undergraduate math ed. majors to math classrooms through an observation practicum and seminar. Setup collaborations with local HS and MS teachers.
- Jan 2005-2008 Statistical Consultant
Professional Development in Reading Project
Evaluation of Reading First in Michigan Project
Helped researchers match research questions to analysis methods and use cutting edge methods to evaluate elementary school reading programs.
- Aug 2001- May 2002 Graduate Student Research Assistant
COMET/NBPTS Project
Coded National Board of Professional Teaching Standards portfolios for instructional quality. Helped revise Teaching Cases used in teacher professional development.
- Jan 2002 – May 2002 Student Teacher Supervisor
University of Michigan Teacher Education Program
Oversaw the student teaching experience of five student teachers. Observed and evaluated their instruction. Taught a weekly seminar for eight student teachers.
- Aug 1999- Aug 2001 Mathematics Instructor
Brigham Young University
Taught college algebra, calculus, and math methods courses. The methods course trained students to use calculators, geometer's sketchpad, spreadsheets, and computer algebra systems in secondary instruction.
- Sep 1999 – Dec 1999 Adjunct Mathematics Instructor
Utah Valley State College
Taught College Algebra at the UVSC extension in Heber City, UT.
- June 1999 – Aug 1999 Academic Advisor, TRIO Student Support Services
Utah Valley State College
Helped advise at-risk students regarding course selection, career planning, and academic counseling.
- Jan 1999-May 1999 High School Mathematics Teacher
Wasatch County High School
Taught algebra I, algebra II, applied algebra and geometry. Coached the discus, javelin, and shot put throws for the track and field team.
- Aug 1998 – Dec 1998 High School Mathematics Teacher (Part Time)
Meridian School
Taught algebra II at a private college prep high school in Provo, UT.

PUBLICATIONS

Corey, D. L. (in preparation). Do you use the mathematics you teach?

Corey, D. L. & Jones, S. (in preparation). Lesson Analysis: A method for sharing instructional knowledge among college mathematics instructors.

Melville, M. & Corey, D. L. (forthcoming). *Kyouzai Kenkyuu*: An Exploration of Japanese Mathematics Teachers' Daily Planning Practices Beyond Lesson Study. *Journal of Mathematics Teacher Education*

Corey, D.L., Ninomiya, H., Peterson, B. E., Soma, K., & Kunimune, S. (forthcoming). *What makes a "Good Lesson" in mathematics?*

Corey, D. L. & Jones, S. (forthcoming) *Building a knowledge base for teaching undergraduate mathematics: Lesson analysis*. Mathematical Association of America.

Corey, D. L., Williams, S., Monroe, E., & Wagner, M. (2020). Teachers' knowledge of student mathematical thinking in written instructional products. *Journal of Mathematics Teacher Education*. <https://doi.org/10.1007/s10857-020-09476-y>

Corey, D. L., West, L., & Kaluhiokalani, K. (2020). Exploring the Knowledge Base for College Mathematics Teaching. *Proceedings of the 23rd annual conference on Research in Undergraduate Mathematics Education*. SIGMAA on RUME. Boston, MA.

Jones, S. R., Jeppson, H. & Corey, D. L. (2019). Potential intellectual needs for Taylor and power series within textbooks, and ideas for improving them. *Proceedings of the 22nd annual conference on Research in Undergraduate Mathematics Education*. SIGMAA on RUME. Oklahoma City, OK.

Corey, D. L., Badger, J., & Lauzon, S. (2019). Spirals, triangles, and tie-dyed t-shirts. *College Mathematics Journal*. <https://doi.org/10.1080/07468342.2019.1655374>

Corey, D. L., & Ninomiya, H. (2019). Values of the Japanese mathematics teacher community. In Clarkson, P., Seah, W. T., & Suk, J. (Eds.), *Values and Valuing in Mathematics Education* (p. 53-67). Springer: Berlin.

Hill, H., Corey, D. L., & Jacob, R. (2018). Dividing by zero: exploring null results in a mathematics professional development program. *Teacher's College Record*, 120(6), 1-42.

Jacob, R., Hill, H., & Corey, D. L. (2017). The impact of a professional development program on teachers' mathematical knowledge for teaching, instruction, and student achievement. *Journal of Research in Educational Effectiveness*, 10(2), 379-407.

Corey, D. L., Leatham, K. R., & Peterson, B. E. (2017). The instructional quality of mathematics student teachers in the United States and Japan: The possible impact of the structure of student teaching. In Son, J. W., Lo, J. J., & Watanabe, T. (Eds.), *What Matters? Research Trends in International Comparative Studies in Mathematics Education* (215-236). Springer: Cham, Switzerland.

Ninomiya, H., & Corey, D. L. (2016). A study on the implicit abilities of teaching: the comparative study between Japan and the US. *Journal of the Japan Academic Society of Mathematics Education: Research in Mathematics Education*, 22(2), 109-121.

Corey, D. L., Lemon, T., Gilbert, E., & Ninomiya, H. (2016). Japanese professional development. *Mathematics Teaching in the Middle School*, 21(9), 544-549.

Corey, D. (2015). Quando e que vou usar isso? *Calculo: Matematica Para Todos*, 48, 56-65.

Corey, D. (2014, Dec 3). Ma a cosa mi serve la matematica? *Il Post*. Retrieved from <http://www.ilpost.it/2014/12/03/utilita-matematica/>

Corey, D. (2014). When will I ever use this? An essay for students who have ever asked this question in math class. *Math Horizons* 22(2). Retrieved from <http://www.maa.org/sites/default/files/pdf/Mathhorizons/supplement/MH-CoreyWeb.pdf>

Hill, H. C., Blazar, D., Humez, A., Litke, E., Beisiegel, M., Barmore, J., Chin, M., Corey, D., Roesler, S., Salzman, L. R., Braslow, D., & Rabinowicz, S. (2013). Examining High and Low Value-Added Mathematics Instruction: Can Expert Observers Tell the Difference? CPRE Working Paper (https://repository.upenn.edu/cpre_workingpapers/11/).

Hansen, D., Schone, P. J., Corey, D. L., Reid, M., & Gehring, J. (2013). Quality control mechanisms for crowdsourcing: Peer review, arbitration, & expertise at FamilySearch indexing. *CSCW '13: Proceedings of the 2013 Conference on Computer Supported Cooperative Work*, 649-660.

Peterson, B. E., Corey, D. L., Lewis, B. M., & Bukarau, J. (2013). Intellectual engagement and five other principles of high-quality mathematics instruction. *The Mathematics Teacher* 106 (6), 446-450.

Phelps, G., Corey, D. L., Demonte, E., 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.

Lewis, J. M., Corey, D. L., & Leong, Y. H. (2012). Studies of high-quality teaching practice in mathematics: a comparative and collective analysis. *Proceedings of the 12th International Congress on Mathematical Education*, 4215-4223.

Corey, D. L., Phelps, G., Demonte, E., Harrison, D., & Ball, D. L. (2012). Explaining Variation in Instructional Time: An Application of Quantile Regression. *Educational Evaluation and Policy Analysis* 34(2) 146-163.

Corey, D. L., Peterson, B. E., Lewis, B. M., & Bukarau, J. (2010). Are there any places that students use their heads? Principles of high-quality Japanese mathematics instruction. *Journal for Research in Mathematics Education*, 41, 438-478.

Corey, D. L. (2010). The state of mathematics education in the US. *The Utah Mathematics Teacher* 3 (1) 26-47.

Corey, D. L. (2009). Trends in mathematics achievement in Utah. *The Utah Mathematics Teacher* 2 (1) 40-45.

Katz, L. A., Stone, C. A., Carlisle, J. F., Corey, D. L., & Zeng, J. (2008). Progress of children identified with speech-language and learning disabilities in Michigan's reading-first schools during the first two years of implementation. *Exceptional Children* 74(2) 235-256.

Corey, D. L., Peterson, B. E., Lewis, B. M., & Bukarau, J. (2008). Six principles of high-quality instruction. *Utah Mathematics Teacher* 1 37-43.

Corey, D. L. (2007). The child and the curriculum, the mathematician and the mathematics educator. *Proceedings of the XXIV Annual Meeting, North American Chapter of the International Group for the Psychology of Mathematics Education*.

Ball, D. L., Hill, H., & Corey D. (2004). A longitudinal multi-method study of instructional improvement: Challenges for practice, theory, and research. In Mogens Niss et al. (Eds.). *Proceedings of the Tenth International Congress on Mathematical Education*.

Corey, D. L. (2004). Students' strategies for measuring the length of diagonal line segments on a grid. In D. E. McDougall & J. A. Ross (Eds.) *Proceedings of the XXVI Annual Meeting, North American Chapter of the International Group for the Psychology of Mathematics Education*. Vol. 1, 384-385.

PRESENTATIONS

Exploring the Knowledge Base for College Mathematics Teaching. RUME SIG-MAA Annual Conference. Boston, MA. February, 2020. (With Linlea West and Kamalani Kaluhiokalani).

Modeling the World Around You with Mathematics. Annual Conference of the School Science and Mathematics Association. SLC, UT. November, 2019.

Modeling the World Around You with Mathematics. Regional Conference of the National Council of Teachers of Mathematics. SLC, UT. October, 2019.

Sharing Instructional Knowledge. Regional Conference of the National Council of Teachers of Mathematics. SLC, UT. October, 2019.

Potential Intellectual Needs for Taylor and Power Series within Textbooks, and Ideas for Improving Them. RUME SIG-MAA Annual Conference. Oklahoma City, OK. February, 2019. (With Steven Jones and Haley Jeppson).

What Japanese Lesson Plans Teach Us About Sharing Knowledge of Teaching. Research Conference of the National Council of Teachers of Mathematics (NCTM). San Antonio, TX. April, 2017.

From Knowledge to Results: What is Missing in Educator Professional Development Design? Portion of a symposium presented at The Society for Research on Educational Effectiveness (SREE) Annual Conference (with Robin Jacob and Heather Hill). March, 2017

Teachers' MKT and Curricular Reasoning in Algebra and Statistics. Presented at the Annual Research Conference of the National Council of Teachers of Mathematics (NCTM). San Francisco, CA. April, 2016.

How to Japanese Teachers Critically Analyze a Lesson During Lesson Study? Presented at the Annual meeting of the Association of Mathematics Teacher Educators (AMTE). Orlando, FL. February, 2015.

Does Common Core Teaching Lead to Improved Student Learning? (with David Blazar, Harvard). Presented at the Hawaii International Conference on Education. Honolulu, HI. January 2015.

Investigating the Effect of Professional Development on Teachers' Mathematical Knowledge for Teaching and Student Achievement (with Robin Jacob and Heather Hill). Presented at the Annual Conference of the Association for Education Finance and Policy. San Antonio, TX. March 2014.

Investigating the Effect of Professional Development on Teachers' Mathematical Knowledge for Teaching and Student Achievement (with Robin Jacob and Heather Hill). Presented at the Annual Meeting of the Society for Research in Educational Effectiveness. Washington, DC. March 2014.

How To Find Good Math Problems for STEM Fair Projects. Presented at the Utah Council of Teachers of Mathematics Fall Conference 2013, Salt Lake City, UT.

Examining High and Low Value-Added Mathematics Instruction: Can Expert Observers Tell the Difference? (with Heather Hill, Erika Litke, Andrea Humez, David Blazar, Johanna Barmor, Mark Chin, Mary Beisiegel, Lucas Salzman, & Sara Roesler). Association for Public Policy Analysis & Management Fall Research Conference. Washington, DC. November 2013.

When Will I Ever Use This? Handling This Question in Mathematics Class. Presented at the Utah Council of Teachers of Mathematics Fall Conference 2012, American Fork, UT.

Studies of high-quality teaching practice in mathematics: a comparative and collective analysis (with Jenny Lewis and Yew Hoong Leong). 12th International Congress on Mathematical Education. Seoul, Korea. July 2012.

Learning about High Quality Mathematics Teaching: What and How, (with Deborah Ball, Jenny Lewis, and Jack Dieckmann). Presented at the National Council of Teachers of Mathematics Research Pre-Session. Philadelphia, PA. April, 2012.

Comparing Instructional Quality of US and Japanese Student Teacher Lessons, (with Blake Peterson and Keith Leatham). Presented at the National Council of Teachers of Mathematics Research Pre-Session. Philadelphia, PA. April, 2012.

Principles of High-Quality Instruction, (with Jenny Lewis). Presented at the Annual meeting of the Association of Mathematics Teacher Educators (AMTE). Fort Worth, TX February, 2012.

Two Keys to Building Mathematical Understanding. Presented at the Utah Council of Teachers of Mathematics Fall Conference 2011, Bountiful, UT.

Studying Effective Mathematics Instruction: Assessment Systems, Professional Learning, and Instructional Interventions, (with Deborah Ball, Jenny Lewis, and Jack Dieckmann). Presented at the National Council of Teachers of Mathematics Research Pre-Session. Indianapolis, IN. April, 2011.

High-Quality Mathematics Instruction (with Jenny Lewis). Presented at the Annual meeting of the Association of Mathematics Teacher Educators (AMTE). Irvine, CA. January, 2011.

The State of Mathematics Education in the US. Presented at the Utah Council of Teachers of Mathematics Fall Conference 2010, Salt Lake City, UT.

Trends of Mathematics Achievement in Utah. Presented at the Utah Council of Teachers of Mathematics Fall Conference 2009, Orem, UT.

Japanese Conceptions of High-quality Mathematics Instruction. Presented at the American Educational Research Association Annual Meeting, April 13-18, 2009.

A New Paradigm of Differentiated Instruction. Presented at the American Educational Research Association Annual Meeting, April 13-18, 2009.

Explaining Variation in Instructional Time: An Application of Quantile Regression, (with Geoff Phelps). Presented at the American Educational Research Association Annual Meeting, April 13-18, 2009.

Six principles of High-Quality Instruction. Presented at the Utah Council of Teachers of Mathematics Fall Conference 2008, Jordan, UT.

Content Specialists and Pedagogical Specialists. Presented at the 84th Annual NCTM Conference Research Presession April 24-26, 2006, St. Louis, Missouri.

Discussant (with Emily Greenman) for the paper *Assessing Bias in the Estimation of Causal Effects: Rosenbaum Bounds on Matching Estimators and Instrumental Variables Estimation with Imperfect Instruments* by Thomas DiPrete. American Sociology Association Quantitative Methodology Conference April 22-24, 2004, Ann Arbor, MI.

Influences on Instruction Focused on Complex Mathematical Learning Outcomes. Presented at the American Educational Research Association Annual Meeting, April 12-16, 2004.

Instructional Time in Mathematics and Students' Opportunities to Learn, (with Deborah L. Ball, Geoff Phelps, Delena Harrison). Presented at the American Educational Research Association Annual Meeting, April 12-16, 2004.

INVITED PRESENTATIONS

Knowledge Base for Teaching College Mathematics. University of Oklahoma. November, 2020.

Lesson Study for College Mathematics Instructors. Inquiry-Based Learning and Teaching in Mathematics Conference. Austin, TX. May, 2018

Top US and East Asian Students: 10 Years Later. Presented at the Utah Council of Teachers of Mathematics Fall Conference, Layton, UT. November 2014.

Comparing Instructional Quality of US and Japanese Student Teacher Lessons. Utah Valley University. Orem, UT. April 2012.

The State of Mathematics Education in the United States. Park City Mathematics Institute, Park City, Utah. July 2011.

The State of Mathematics Education in the United States. Utah Valley University. Orem, UT. March 2011.

The Relationship Between Mathematical Knowledge for Teaching (MKT) and Principles of High-Quality Instruction. Keynote address given at the MAA sectional meeting. Logan, UT. March 2010.

Mathematicians and Mathematics Educators, The Child and The Curriculum. Brigham Young University. Provo, UT. 2006.

GRANTS and AWARDS

PI on NSF Conference Grant (Accepted). *Conference on Building a Knowledge Base for Teaching College Mathematics.* National Science Foundation. \$74,000. Mar 2020 – Mar 2021.

Co-Pi on BYU Interdisciplinary Research (IDR) Origination Awards (Declined): *Lesson Study to Enhance Equitable Math Teaching for Black Students in Middle School*. About \$120,000. Aug 2019-Aug 2021.

Co-Pi on IES proposal (Declined): *Improving Argumentative Writing through Playable Case Studies*. About \$400,000. Aug 2017-2020.

Co-PI on NSF Exploratory DRK12 Grant (Declined). *Mathematics Experts as Knowledgeable Others for Teaching (MEKOT)*. 450,000. Aug 2015- Aug 2018.

Co-PI on NSF Grant (Declined) *Mathematics Experts as Knowledgeable Others for Teaching (MEKOT)*. NSF DR K-12. About \$4,500,000. Aug 2014 – Aug 2019.

Post-Doctoral Fellowship from the Japan Society for the Promotion of Science (JSPS). This paid for a one-month collaboration and data collection trip in Japan. Award Amount about \$6,000. Jan-Feb 2014.

Co-PI on NSF Grant (Award Number 0918383) *Investigating the Effect of Professional Development, Mathematical Knowledge for Teaching, and Instruction on Student Outcomes*. Award Amount \$4,500,000. Aug 2009-Aug 2014.

NSF CAREER Grant (Declined) *Conceptions of High-Quality Instruction in Three International Contexts: The US, Japan, and Hong Kong*. Award Amount \$455,295. July 2013-July 2018.

Co-PI on Utah State Common Core Curriculum Grant (Declined). Proposal to write texts for the new 7th and 8th grade Common Core State Standards for the state of Utah.

TEACHING

High School: Algebra I, Algebra II, Geometry, Applied Math.

Undergraduate: College Algebra, Calculus I & II, College Geometry, Mathematics for Elementary School Teachers (I & II), Teaching Mathematics with Technology, Teaching and Learning of Statistics, High School Mathematics Student Teaching Seminar, Introduction to the Mathematics Classroom.

Graduate: Introduction to Research and Theories in Mathematics Education
Number and Number Sense
Problem Solving
Mathematics Education Seminar

PROFESSIONAL INVOLVEMENT

March 2014 – March 2015 President of the Utah Association of Mathematics Teacher Educators (UAMTE).

March 2013 – March 2014 President-Elect of the Utah Association of Mathematics Teacher Educators (UAMTE).

January 2011 – Jan. 2013 Association of Mathematics Teacher Educators (AMTE) Award Committee Chair

January 2010 – Jan. 2011 Association of Mathematics Teacher Educators (AMTE) Award Committee Member

Fall 2008 – Fall 2010 Vice-President of the Utah Council of Teachers of Mathematics

Reviewer: *American Educational Research Journal, Teaching and Teacher Education, Journal for Research in Mathematics Education, and The Mathematics Teacher Educator*

Recent Professional Organization Memberships: *American Educational Research Association (AERA), National Council of Teachers of Mathematics, Association of Mathematics Teacher Educators, North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Society for Research in Educational Effectiveness (SREE), Association for Research Finance and Policy (AEFP), The Utah Council of Teachers of Mathematics, and The Utah Association of Mathematics Teacher Educators.*