

Julie Sarama

University of Denver
Morgridge College of Education
Katherine A. Ruffatto Hall 154
1999 East Evans Avenue
Denver, CO 80208-1700

Julie.Sarama@du.edu

(303) 871-3665

<http://portfolio.du.edu/jsarama>

http://www.researchgate.net/profile/Julie_Sarama

EDUCATION

Ph.D., Mathematics Education, University at Buffalo, State University of New York, 1995.

Dissertation: *Redesigning Logo: The Turtle Metaphor in Mathematics Education*

M.Ed., Mathematics Education, University at Buffalo, State University of New York, 1989

B.A., Mathematics, University at Buffalo, State University of New York, 1987

EXPERIENCE

University

Distinguished University Professor and Kennedy Endowed Chair in Innovative Learning Technologies, University of Denver, 2018-present

Kennedy Endowed Chair in Innovative Learning Technologies and Professor, University of Denver, 2012-2018

Professor, Mathematics Education, University at Buffalo, State University of New York, 2010-2012

Associate Professor, Mathematics Education, University at Buffalo, State University of New York, 2003-2010

Assistant Professor, Mathematics Education, University at Buffalo, State University of New York, 2000-2003

Assistant Professor, Mathematics Education, Wayne State University, 1996-2000

Instructor, State University College of New York at Buffalo, 1995 - 1996

Research Co-director, University at Buffalo, State University of New York, 1995-1996

Responsibilities: Initiate and direct research projects within a National Science Foundation funded research project, conduct teacher workshops, develop and author grant proposals.

Instructor, University at Buffalo, State University of New York, 1994 - 1996
Secondary Math Methods and Computers in Elementary Math Education

Research Assistant, University at Buffalo, State University of New York, 1991-1995

Teaching Assistant and Instructor, University at Buffalo, State University of New York, 1988-1989.

Algebra, Trigonometry, and Pre-calculus

Secondary

Math Teacher, Gifted Math Program, University at Buffalo, State University of New York, 1990-1992

Teaching Assistant, Gifted Math Program, University at Buffalo, State University of New York, 1988-1990

Computer Science and Math Teacher, Frontier Central High School, 1989-1990]

PROFESSIONAL CONTRIBUTIONS

Grants and Sponsored Programs

Presently Funded Projects

1. Clements, D. H., Sarama, J., Kutaka, T S.. *The Evolution of Learning Strategies as Indicators of Intervention Efficacy*. Awarded by the U.S. Department of Education, IES (Institute of Education Sciences), Grant No. R305A200100. 8/1/2020 — 7/31/2022. (2 years; \$ 565,047.60).
2. Clements, D. H., Sarama, J., Ready, D. *Learning Trajectories as a Complete Early Mathematics Intervention: Achieving Efficacies of Economies at Scale*. Awarded by the National Science Foundation, Grant No. 1908889. July 1 , 2019 – June 30, 2024. (5 years, \$4,575,683).
3. Sarama, J., Clements, D. H., Day-Hess, C. A., Watt, T. W. *Evaluating the Efficacy of an Interdisciplinary Preschool Curriculum (EPIC)*. Awarded by the U.S. Department of Education, IES (Institute of Education Sciences), Grant No. R305A190395. 7/1/2019 . (4 years; \$3,295,431).
4. Vinh, M., Lim, C., Sarama, J. Clements, D. H. *Special Education Educational Technology Media, and Materials for Individuals with Disabilities*. Office of

Special Education Programs (OSEP, U.S. Dept. of Education), Federal Award No: H327G180006 Subaward No: 5112267, \$1,968,961 for subcontract from University of North Carolina). 1/1/2019-12/31/2023.

5. Germeroth, C., Clements, D. H., Sarama, J., & Day-Hess, C. *Regional Educational Laboratory: Central*. Awarded by the Institute of Education Sciences (IES, through subaward from Central Regional Education Laboratory), Grant # 2015100224. 1/3/2017- 12/31/2022 (\$1,437,401).
6. Clements, D. H. and Sarama, J. *Deepening and Extending the Learning and Teaching with Learning Trajectories Tool (LT²)*. Awarded by the Heising-Simons Foundation. 6/1/16 - 5/31/18. (\$510,401).
7. Clements, D. H. and Sarama, J. *National Center on Early Childhood, Teaching, Learning, and Development*. Awarded by the ACF (through subaward from Zero to Three). 10/1/2015-9/29/2019 (\$1,546,862).
8. Clements, D. H., Sarama, J., Baroody, A., J., Purpura, D. *Evaluating the Efficacy of Learning Trajectories in Early Mathematics*. Awarded by the U.S. Department of Education, IES (Institute of Education Sciences), Grant No. R305A120813. 8/1/2015 — 7/31/2019. (4 years; \$3,500,000).
9. Clements, D. H. and Sarama, J. *Preschool-Elementary-Coherence Project (COHERE)*. Awarded by the Heising-Simons Foundation (through Stanford University). 12/1/14 – 6/30/16. (19 months; \$108,809)
10. Clements, D. H. and Sarama, J. *Math and Executive Function Project (EF)*. Awarded by the Heising-Simons Foundation (through Stanford University). 12/1/14 – 6/30/16. (19 months; \$114,136)

Funded Projects Completed

11. Clements, D. H. and Sarama, J., with Lopez, M., and Arias, A. *Learning and Teaching with Learning Trajectories (LT²)*. Awarded by the Gates Foundation. 12/1/14 – 11/30/16. (24 months; \$679,550)
12. Clements, D. H. and Sarama, J. *Scalable Professional Development in Early Mathematics: The Learning and Teaching with Learning Trajectories Tool*. Awarded by the Heising-Simons Foundation. 11/25/13 – 11/24/15. (48 months; \$500,000).
13. Clements, D. H., Sarama, J., and Baroody, A., J. *Background Research for the NGA Center Project on Early Mathematics*. Awarded by the National Governors' Association. 7/22/2103-11/30/2103. (4 months; \$25,000).
14. Barrett, Jeffrey, Clements, D. H., and Sarama, J. *Learning Trajectories to Support the Growth of Measurement Knowledge: Pre-K through Middle School*. Awarded by the National Science Foundation, Elementary, Secondary, and Informal Science Education, Research on Educational Policy and

- Practice, NSF #DRL-1222944. June 1, 2013-May 31, 2016. (48 months; \$3,324,000; DU's portion \$1,228,297).
15. Clements, D. H., Sarama, J. Tatsuoka, C. *Using Rule Space and Poset-based Adaptive Testing Methodologies to Identify Ability Patterns in Early Mathematics and Create a Comprehensive Mathematics Ability Test*. Awarded by the National Science Foundation, Grant No. DRL-1313695 (48 months; \$2,488,438, with, with an effective date of 09/01/10.).
 16. Sarama, J., Clements, D. H., Duke, N. & Brenneman, K. *Early Childhood Education in the Context of Mathematics, Science, and Literacy*. Awarded by the National Science Foundation (48 months; \$ 2,864,231, with an effective date of 09/01/10.), Grant No. DRL-1020118.
 17. Suzuka, K., Sarama, J., Clements, D. H., Walters, K., Boerst, T., *Developing Teaching Expertise in K-5 Mathematics*. Awarded by the National Science Foundation (48 months; \$3,292,648, with an effective date of 09/01/10; new end date, 8/31/2015.), Grant No. DRL-1118745.
 18. Clements, D. H., Sarama, J., and Layzer, C. *Scaling Up TRIAD: Longitudinal Study of a Successful Scaling Up Project: Extending TRIAD*. Awarded by the U.S. Department of Education, IES (Institute of Education Sciences, Grant No. R305A110188 (36 months; \$ 1,873,700, with an effective date of 5/1/2011)
 19. Barrett, Jeffrey, Clements, D. H., and Sarama, J. *A Longitudinal Account of Children's Knowledge of Measurement*. Awarded by the National Science Foundation, Elementary, Secondary, and Informal Science Education, Research on Educational Policy and Practice. 8/15/2007-9/30/2011. (48 months; \$2,786,504; UB's portion \$604,049, \$114,601 for year 1).
 20. Sarama, J., Clements, D. H., Bodrova, E., and Layzer, C. *Increasing the efficacy of an early mathematics curriculum with scaffolding designed to promote self-regulation*. Awarded by the U.S. Department of Education, IES (Institute of Educational Sciences) (48 months; \$3,048,697, with an effective date of 6/1/2008), Grant No. R305A080200. Ended 5/31/2012).
 21. Sarama, J. *Comprehensive Postdoctoral Training in Scientific Education Research*. Awarded by the U.S. Department of Education, IES (Institute of Educational Sciences) (48 months; \$726,936, with an effective date of 3/1/2007), Grant No. R305A070468A. Ended 2/28/2011.
 22. GSE Video Analysis Collaborative. *Transforming SimpleCommenter into a Power Video Analysis Tool for Research and Teaching*. Awarded by the ETC, University of Buffalo, SUNY (\$10,000, 7/1/2006).
 23. Clements, D. H., Sarama, J., & Lee, J. *Scaling Up TRIAD: Teaching Early Mathematics for Understanding with Trajectories and Technologies*. Awarded

by the U.S. Department of Education, IES (Institute of Education Sciences; as part of the Interagency Educational Research Initiative, or IERI program, a combination of IES, NSF, and NIH) (60 months; \$6,000,000, with an effective date of 6/1/2005).

24. Clements, D. H. and Sarama, J. *Scaling Up TRIAD: Teaching Early Mathematics for Understanding with Trajectories and Technologies—Supplement*. Awarded by the U.S. Department of Education, IES (Institute of Education Sciences, Grant No. R305K050157; as part of the Interagency Educational Research Initiative, or IERI program, a combination of IES, NSF, and NIH) (60 months; \$1,192,389, with an effective date of 6/1/2005).
25. Sarama, J., and Clements, D. H. *Scaling Up TRIAD: Teaching Early Mathematics for Understanding with Trajectories and Technologies—Supplement*. Awarded by the U.S. Department of Education, IES (Institute of Education Sciences; as part of the Interagency Educational Research Initiative, or IERI program, a combination of IES, NSF, and NIH) (60 months; \$1,192,389, with an effective date of 6/1/2005).
26. Sarama, J. *Planning for Professional Development in Pre-School Mathematics: Meeting the Challenge of Standards 2000*. Awarded by the National Science Foundation, Teacher Enhancement Program, grant number ESI-9814218. 6/1/98-5/1/99 (full grant 12 months; \$50,000 with an effective date of 10/01/98.).
27. Sarama, J. [External Evaluation of] *Creating a National Library of Interactive Web-Based Virtual Manipulatives for K-8 Mathematics*. Awarded by the National Science Foundation, Instructional Materials Development, forthcoming (evaluation budget 36 months; \$66,458).
28. Clements, D. H., Sarama, J., Klein, A., & Starkey, Prentice. *Scaling Up the Implementation of a Pre-Kindergarten Mathematics Curricula: Teaching for Understanding with Trajectories and Technologies*. Awarded by the National Science Foundation (NSF, as part of the Interagency Educational Research Initiative, or IERI program, a combination of NSF, Dept. of Education, and NIH) (24 months; \$999,672, with an effective date of 9/15/02).
29. Sarama, J. & Clements, D. H. [Research portion of materials development grant, in conjunction with Paul Goldenberg and others at EDC]. *Learning by doing: A comprehensive K–5 mathematics curriculum for children and for their teachers*. Awarded by the National Science Foundation, Instructional Materials Development (Sarama is PI at UB. Project is 48 months; \$5,000,000 for the entire effort; \$372,000 for UB’s portion, with an effective date of 06/01/01.).
30. Clements, D. H. & Sarama, J. *Building Blocks—Foundations for Mathematical Thinking, Pre-Kindergarten to Grade 2: Research-based Materials Development*. Awarded by the National Science Foundation, Instructional Materials

Development, grant number ESI-9730804. 6/1/98-5/1/02 (full grant 48 months; \$999,807 with an effective date of 06/01/98; ending date extended to 5/1/2005).

31. Sarama, J., Clements, D. H., Starkey, Prentice, and Klein, A. *A Longitudinal Study of the Effects of a Pre-Kindergarten Mathematics Curriculum on Low-Income Children's Mathematical Knowledge*. Awarded by OERI, Department of Education (Sarama is PI at UB. Full grant 48 months; \$2,607,653 [FY 2002, \$688,348] for the entire effort; \$1,065,663 for UB's portion, with an effective date of 07/15/02.).

Publications: Articles in Refereed Journals

1. Clements, D. H., Dumas, D., Dong, Y., Banse, H. W., Sarama, J., & Day-Hess, C. A. (2020). Strategy diversity in early mathematics classrooms. *Contemporary Educational Psychology*, 60. doi: 10.1016/j.cedpsych.2019.101834
2. Clements, D. H., Sarama, J., Baroody, A. J., & Joswick, C. (2020). Efficacy of a learning trajectory approach compared to a teach-to-target approach for addition and subtraction. *ZDM Mathematics Education*, 52, 637–648. doi: 10.1007/s11858-019-01122-z
3. Clements, D. H., Sarama, J., Brenneman, K., Duke, N. K., & Hemmeter, M. L. (2020). STREAM education at work—No, at play! A toy-making unit. *YC Young Children*, 75(2), 36-43.
4. Clements, D. H., Sarama, J., Layzer, C., Unlu, F., & Fesler, L. (2020). Effects on mathematics and executive function of a mathematics and play intervention versus mathematics alone. *Journal for Research in Mathematics Education*, 51(3), 301-333. doi: 10.5951/jresmetheduc-2019-0069
5. Clements, D. H., Vinh, M., Lim, C.-I., & Sarama, J. (2020). STEM for inclusive excellence and equity. *Early Education and Development*. doi: 10.1080/10409289.2020.1755776
6. Eames, C. L., Barrett, J. E., Cullen, C. J., Rutherford, G., Klanderma, D., Clements, D. H., Sarama, Julie, and Van Dine, D. W. (2020). Examining and developing fourth grade children's area estimation performance. *School Science and Mathematics*, 120(2), 67-78. doi: 10.1111/ssm.12386
7. Clements, D. H., Sarama, J., Baroody, A. J., Joswick, C., & Wolfe, C. B. (2019). Evaluating the efficacy of a learning trajectory for early shape composition. *American Educational Research Journal*, 56(6), 2509-2530. doi: 10.3102/0002831219842788
8. Dumas, D., McNeish, D., Sarama, J., & Clements, D. (2019). Preschool mathematics intervention can significantly improve student learning trajectories through elementary school. *AERA Open*, 5(4), 1-5. doi:10.1177/2332858419879446

9. Clements, D. H., Fuson, K. C., & Sarama, J. (2019). Critiques of the common core in early math: A research-based response. *Journal for Research in Mathematics Education*, 50(1), 11–22. doi:10.5951/jresematheduc.50.1.0011
10. Joswick, C., Clements, D. H., Sarama, J., Banse, H., & Day-Hess, C. A. (2019). Double impact: Mathematics and executive function. *Teaching Children Mathematics*, 25(7), 416-426. Clements, D. H., Sarama, J., Swaminathan, S., Weber, D., & Trawick-Smith, J. (2018). Teaching and learning Geometry: Early foundations. *Quadrante*, 27(2), 7-31.
11. Kang, C. Y., Duncan, G. J., Clements, D. H., Sarama, J., & Bailey, D. H. (2019). The roles of transfer of learning and forgetting in the persistence and fadeout of early childhood mathematics interventions. *Journal of Educational Psychology*, 111(4), 590–603. <https://doi.org/10.1037/edu0000297>
12. Germeroth, C., Bodrova, E., Day-Hess, C. A., Barker, J., Sarama, J., Clements, D. H., & Layzer, C. (2019). Play it high, play it low: Examining the reliability and validity of a new observation tool to assess children’s make-believe play. *American Journal of Play*, 11(2), 183-221.
13. Cullen, A. L., Eames, C. L., Cullen, C. J., Barrett, J. E., Sarama, J., Clements, D. H., & Van Dine, D. W. (2018). Effects of three interventions on children's spatial structuring and coordination of area units. *Journal for Research in Mathematics Education*, 49(5), 533-574.
14. Clements, D. H., Sarama, J., Barrett, J. E., Van Dine, D. W., Cullen, C. J., Hudyma, A., Dolgin, R, Cullen, A. L. & Eames, C. L. (2018). Evaluation of three interventions teaching area measurement as spatial structuring to young children. *The Journal of Mathematical Behavior*, 50, 23-41. doi:10.1016/j.jmathb.2017.12.004
15. Jenkins, J. M., Watts, T. W., Magnuson, K. A., Gershoff, E., Clements, D. H., Sarama, J., & Duncan, G. J. (2018). Do high quality kindergarten and first grade classrooms mitigate preschool fadeout? *Journal of Research on Educational Effectiveness*, 11(3), 339-374. doi:10.1080/19345747.2018.1441347
16. Clements, D. H., & Sarama, J. (2018). Myths of early math. *Education Sciences*, 8(71), 1-8. doi:10.3390/educsci8020071
17. Watts, T. W., Duncan, G. J., Clements, D. H., & Sarama, J. (2018). What is the long-run impact of learning mathematics during preschool? *Child Development*, 89(2), 539–555. doi:10.1111/cdev.12713
18. Foster, M. E., Anthony, J. L., Clements, D. H., Sarama, J., & Williams, J. J. (2018). Hispanic dual language learning kindergarten students response to a numeracy intervention: A randomized control trial. *Early Childhood Research Quarterly*, 43, 83–95. doi:10.1016/j.ecresq.2018.01.009
19. Bailey, D. H., Duncan, G. J., Watts, T. W., Clements, D. H., & Sarama, J. (2018). Risky business: Correlation and causation in longitudinal studies of skill development. *American Psychologist*, 73(1), 81-94.

20. Clements, D. H., & Sarama, J. (2017). Valid issues but limited scope: A response to Kitchen and Berk's research commentary on educational technology. *Journal for Research in Mathematics Education*, 48(5), 474-482.
21. Schenke, K., Watts, T. W., Nguyen, T., Sarama, J., & Clements, D. H. (2017). Differential effects of the classroom on African American and non-African American's mathematics achievement. *Journal of Educational Psychology*, 109(6), 794-811.
22. Clements, D. H., Fuson, K. C., & Sarama, J. (2017). What is developmentally appropriate teaching? *Teaching Children Mathematics*, 24(3), 178-188.
23. Sarama, J., & Clements, D. H. (2017). Interventions in early mathematics: Avoiding pollution and dilution. *Advances in Child Development and Behavior*, 53, 95-126.
24. Germeroth, C., & Sarama, J. (2017). Coaching in early mathematics. *Advances in Child Development and Behavior*, 53, 127-168.
25. Clements, D. H., Fuson, K. C., & Sarama, J. (2017). The research-based balance in early childhood mathematics: A response to Common Core criticisms. *Early Childhood Research Quarterly*, 40, 150-162.
26. Watts, T. W., Clements, D. H., Sarama, J., Wolfe, C. B., Spitler, M. E., & Bailey, D. H. (2017). Does early mathematics intervention change the processes underlying children's learning? *Journal of Research on Educational Effectiveness*, 10(1), 96-115. doi: 10.1080/19345747.2016.1204640
27. Sarama, J., Clements, D. H., & Spitler, M. E. (2017). Evidence of teacher change after participating in TRIAD's learning trajectories-based professional development and after implementing learning trajectory-based mathematics. *Mathematics Teacher Education and Development*, 19(3), 58-75.
28. O'Dell, J. R., Barrett, J. E., Cullen, C. J., Rupnow, T. J., Clements, D. H., Sarama, J., Rutherford, G., & Beck, P. S. (2017). Using a virtual manipulative environment to support students' organizational structuring of volume units. In E. Galindo & J. Newton (Eds.), *Proceedings of the thirty-ninth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 1329-1336). Indianapolis, IN: Hoosier Association of Mathematics Teacher Educators.
29. Sarama, J., Clements, D. H., Wolfe, C. B., & Spitler, M. E. (2016). Professional development in early mathematics: Effects of an intervention based on learning trajectories on teachers' practices. *Nordic Studies in Mathematics Education*, 21(4), 29-55.
30. Clements, D. H., & Sarama, J. (2016). Math, science, and technology in the early grades. *The Future of Children*, 26(2), 75-94.
31. Foster, M. E., Anthony, J. L., Clements, D. H., & Sarama, J. (2016). Improving mathematics learning of kindergarten students through

- computer assisted instruction. *Journal for Research in Mathematics Education*, 47(3), 206-232.
32. Bailey, D. H., Nguyen, T., Jenkins, J. M., Domina, T., Clements, D. H., & Sarama, J. S. (2016). Fadeout in an early mathematics intervention: Constraining content or preexisting differences? *Developmental Psychology*, 52(9), 1457-1469. <https://doi.org/10.1037/dev0000188>
 33. Nguyen, T., Watts, T. W., Duncan, G. J., Clements, D. H., Sarama, J. S., Wolfe, C., & Spitler, M. E. (2016). Which preschool mathematics competencies are most predictive of fifth grade achievement? *Early Childhood Research Quarterly*, 36, 550-560. doi: <http://dx.doi.org/10.1016/j.ecresq.2016.02.003>
 34. Clements, D. H., Sarama, J., & Germeroth, C. (2016). Learning executive function and early mathematics: Directions of causal relations. *Early Childhood Research Quarterly*, 36, 79–90. doi: 10.1016/j.ecresq.2015.12.009.
 35. Clements, D. H., Sarama, J., Wolfe, C. B., & Spitler, M. E. (2015). Sustainability of a scale-up intervention in early mathematics: Longitudinal evaluation of implementation fidelity. *Early Education and Development*, 26(3), 427-449. doi: 10.1080/10409289.2015.968242
 36. Fuson, K. C., Clements, D. H., & Sarama, J. (2015). Making early math education work for all children. *Phi Delta Kappan*, 97, 63-68.
 37. Clements, D. H., & Sarama, J. (2015). Discussion from a mathematics education perspective. *Mathematical Thinking and Learning*, 17(2-3), 244-252. doi: 10.1080/10986065.2015.1016826
 38. Fuson, K. C., Clements, D. H., & Sarama, J. (2015). Making early math education work for all children. *Phi Delta Kappan*. <http://www.kappancommoncore.org/making-early-math-education-work-for-all-children/>
 39. Foster, M. E., Anthony, J. L., Clements, D. H., & Sarama, J. (2015). Processes in the development of mathematics in kindergarten children from Title 1 schools. *Journal of Experimental Child Psychology*, 140, 56–73. doi: 10.1016/j.jecp.2015.07.004
 40. Clements, D. H., Sarama, J., Wolfe, C. B., & Spitler, M. E. (2013). Longitudinal evaluation of a scale-up model for teaching mathematics with trajectories and technologies: Persistence of effects in the third year. *American Educational Research Journal*, 50(4), 812 - 850. doi: 10.3102/0002831212469270.
 41. Szilágyi, J., Clements, D. H., & Sarama, J. (2013). Young children's understandings of length measurement: Evaluating a learning trajectory. *ZDM-The International Journal on Mathematics Education*, 44, 581-620. www.jstor.org/stable/10.5951/jresmetheduc.44.3.
 42. Sarama, J., Lange, A., Clements, D. H., & Wolfe, C. B. (2012). The impacts of an early mathematics curriculum on emerging literacy and language. *Early*

Childhood Research Quarterly, 27, 489-502. doi: 10.1016/j.ecresq.2011.12.002

43. Sarama, J., Clements, D. H., Wolfe, C. B., & Spitler, M. E. (2012). Longitudinal evaluation of a scale-up model for teaching mathematics with trajectories and technologies. *Journal of Research on Educational Effectiveness*, 5(2), 105-135.
44. Weiland, C., Wolfe, C. B., Hurwitz, M. D., Clements, D. H., Sarama, J. H., & Yoshikawa, H. (2012). Early mathematics assessment: Validation of the short form of a prekindergarten and kindergarten mathematics measure. *Educational Psychology*, 32(3), 311-333. doi: 10.1080/01443410.2011.654190
45. Sarama, J., Clements, D. H., Barrett, J. E., Van Dine, D. W., & McDonel, J. S. (2011). Evaluation of a learning trajectory for length in the early years. *ZDM-The International Journal on Mathematics Education*, 43, 667-680. doi: 10.1007/s11858-011-0326-5
46. Clements, D. H., & Sarama, J. (2011). Early childhood mathematics intervention. *Science*, 333, 968-970.
47. Sarama, J., & Clements, D. H. (2011). Mathematics knowledge of low-income entering preschoolers. *Far East Journal of Mathematical Education*, 6(1), 41-63.
48. Clements, D. H., & Sarama, J. (2011). Early childhood teacher education: The case of geometry. *Journal of Mathematics Teacher Education*, 14, 113-148.
49. Clements, D. H., Sarama, J., Spitler, M. E., Lange, A. A., & Wolfe, C. B. (2011). Mathematics learned by young children in an intervention based on learning trajectories: A large-scale cluster randomized trial. *Journal for Research in Mathematics Education*, 42(2), 127-166.
50. Sarama, J., & Clements, D. H. (2009). "Concrete" computer manipulatives in mathematics education. *Child Development Perspectives*, 3(3), 145-150.
51. Sarama, J., & Clements, D. H. (2009). Teaching math in the primary grades: The learning trajectories approach. *Young Children*, 64(2), 63-65.
52. Sarama, J., & Clements, D. H. (2009). Building blocks and cognitive building blocks: Playing to know the world mathematically. *American Journal of Play*, 1, 313-337.
53. Sarama, J., Clements, D. H., Starkey, P., Klein, A., & Wakeley, A. (2008). Scaling up the implementation of a pre-kindergarten mathematics curriculum: Teaching for understanding with trajectories and technologies. *Journal of Research on Educational Effectiveness*, 1(2), 89-119.
54. Klein, A., Starkey, P., Sarama, J., Clements, D. H., & Iyer, R. (2008). Effects of a pre-kindergarten mathematics intervention: A randomized experiment. *Journal of Research on Educational Effectiveness*, 1, 155-178.
55. Clements, D. H., Sarama, J., & Liu, X. (2008). Development of a measure of early mathematics achievement using the Rasch model:

- The Research-based Early Maths Assessment. *Educational Psychology*, 28(4), 457-482
56. Clements, D. H., & Sarama, J. (2008). Experimental evaluation of the effects of a research-based preschool mathematics curriculum. *American Educational Research Journal*, 45, 443-494.
 57. Sarama, J., & Clements, D. H. (2008). Focal points—Grades 1 and 2. *Teaching Children Mathematics*, 14, 396-401.
 58. Clements, D. H., & Sarama, J. (2008). Focal points—Pre-K to Kindergarten. *Teaching Children Mathematics*, 14, 361-365.
 59. Brown, C. S., Sarama, J., & Clements, D. H. (2007). Thinking about learning trajectories in preschool. *Teaching Children Mathematics*, 14, 178-181.
 60. Clements, D. H., & Sarama, J. (2007). Effects of a preschool mathematics curriculum: Summative research on the *Building Blocks* project. *Journal for Research in Mathematics Education*, 38, 136-163.
 61. Sarama, J., & Clements, D. H. (2006). Mathematics, young students, and computers: Software, teaching strategies and professional development. *The Mathematics Educator*, 9(2), 16-38.
 62. Clements, D. H., & Sarama, J. (2005). Young children's abstract mathematical thinking. *Hong Kong Journal of Early Education*, 4(1), 5-10.
 63. Gerber, S., Scott, L., Clements, D. H., & Sarama, J. (2005). Instructor influence on reasoned argument in discussion boards. *Educational Technology Research and Development*, 53(2), 25-39.
 64. Clements, D. H., & Sarama, J. (2005). Math play: How young children approach math. *Early Childhood Today*, 19(4), 50-57.
 65. Clements, D. H., & Sarama, J. (2004). *Building Blocks* for early childhood mathematics. *Early Childhood Research Quarterly*, 19, 181-189.
 66. Clements, D. H., & Sarama, J. (2004). Learning trajectories in mathematics education. *Mathematical Thinking and Learning*, 6, 81-89.
 67. Clements, D. H., Wilson, D. C., & Sarama, J. (2004). Young children's composition of geometric figures: A learning trajectory. *Mathematical Thinking and Learning*, 6, 163-184.
 68. Clements, D. H., & Sarama, J. (2004). Mathematics everywhere, every time. *Teaching Children Mathematics*, 10, 421-426.
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Publications: Articles in Nonrefereed Journals

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Note: The following Logo Exchange article is one of over 30 similar articles from a monthly column that spanned the years 1992 to 2000 in which Sarama & Clements exchanged senior authorship.

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Publications: Curriculum Materials and Textbooks

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6. Schiller, P., Clements, D. H., Sarama, J., & Lara-Alecio, R. (2003). *DLM Early Childhood Express*. Columbus, OH: SRA/McGraw-Hill. (324 pages for each of four publications, A to D)
7. Clements, D. H., & Sarama, J. (2003). *DLM Early Childhood Express Math Resource Guide*. Columbus, OH: SRA/McGraw-Hill. (Descriptions of the DLM Math program, suggestions for teaching, activity sheets, etc.)
8. Economopoulos, Karen, Murray, Megan, O'Neil, Kim, Clements, Douglas H., Sarama, Julie, and Russell, Susan Jo. (1998). *Making shapes and building blocks*. Menlo Park, CA: Dale Seymour Publications. (192 pages)
9. Schiller, P., Clements, D. H., Sarama, J., & Lara-Alecio, R. (2003). *DLM Early Childhood Express. Teacher's Edition A*. Columbus, OH: SRA/McGraw-Hill. (324 pages)
10. Schiller, P., Clements, D. H., Sarama, J., & Lara-Alecio, R. (2003). *DLM Early Childhood Express. Teacher's Edition B*. Columbus, OH: SRA/McGraw-Hill. (324 pages)
11. Schiller, P., Clements, D. H., Sarama, J., & Lara-Alecio, R. (2003). *DLM Early Childhood Express. Teacher's Edition C*. Columbus, OH: SRA/McGraw-Hill. (324 pages)
12. Schiller, P., Clements, D. H., Sarama, J., & Lara-Alecio, R. (2003). *DLM Early Childhood Express. Teacher's Edition D*. Columbus, OH: SRA/McGraw-Hill. (324 pages)
13. Snider, A., Burk, D., Clements, D. H., & Sarama, J. (2000). *Technology Connections, Kindergarten*. Salem, OR: The Math Learning Center.
14. Snider, A., Burk, D., Clements, D. H., & Sarama, J. (2000). *Technology Connections, First Grade*. Salem, OR: The Math Learning Center.

15. Russell, S. J., Clements, D. H., & Sarama, J. (1998). *Quilt squares and block towns*. Menlo Park, CA: Dale Seymour Publications. (238 pages)
16. Economopoulos, Karen, Joan Akers, Douglas H. Clements, Anne Goodrow, Jerrie Moffet, and Julie Sarama. (1997). *Mathematical thinking at grade 2*. Palo Alto, CA: Dale Seymour Publications. (218 pages)
17. Akers, J., Battista, M. T., Goodrow, A., Clements, D. H., & Sarama, J. (1997). *Shapes, halves, and symmetry: Geometry and fractions*. Palo Alto, CA: Dale Seymour Publications (209 pages).
18. Goodrow, A., Clements, D. H., Battista, M. T., Sarama, J., & Akers, J. (1997). *How long? How far? Measurement*. Palo Alto, CA: Dale Seymour Publications. (167 pages).
19. Tierney, C., Nemirovsky, R., Noble, T., Clements, D. H., , & Sarama, J. (1996). *Patterns of change*. Cambridge, MA: Dale Seymour Publications (152 pages).
20. Economopoulos, K., Akers, J., Clements, D. H., Goodrow, A., Moffet, J., & Sarama, J. (1996). *Mathematical thinking at grade 2..* Cambridge, MA: Dale Seymour Publications (218 pages).
21. Clements, D. H., Tierney, C., Murray, M., Akers, J., & Sarama, J. (1996). *Picturing polygons*. Cambridge, MA: Dale Seymour Publications (206 pages).
22. Clements, Douglas H., Battista, Michael T., Akers, Joan, Woolley, Virginia, Meredith, Julie Sarama & McMillen, Sue (1995). *Turtle paths*. Cambridge, MA: Dale Seymour Publications.
23. Clements, Douglas H., Russell, Susan Jo, Tierney, Cornelia, Battista, Michael T., & Meredith, Julie Sarama (1995). *Flips, turns, and area*. Cambridge, MA: Dale Seymour Publications.

Computer Software

1. Clements, D. H., & Sarama, J. (2003). *DLM Math Software* [software]. Columbus, OH: SRA/McGraw-Hill. (Eleven different research-based software programs, with up to 7 leveled activities in each, all managed by a complete computer-managed instruction system, each designed and researched by the authors; includes teacher's manual)
2. Clements, D. H., & Sarama, J. (2001). *Pattern Blocks and Mini-Quilts*. Salem, OR: The Math Learning Center.
3. Clements, D. H., & Sarama, J. (2001). *Quilts & Pattern Block Puzzles*. Salem, OR: The Math Learning Center.
4. Clements, D. H., & Sarama, J. (1998). *Shapes—Making shapes* [Computer program]. Palo Alto, CA: Dale Seymour Publications.
5. Clements, D. H., & Sarama, J. (1998). *Shapes—Quilt squares/block town* [Computer program]. Palo Alto, CA: Dale Seymour Publications.

6. Clements, D. H., Sarama, J. (1996). *Geo-Logo How Long? How Far?*[Computer program]. Palo Alto, CA: Dale Seymour Publications.
7. Clements, D. H., & Sarama, J. (1997). *Shapes — Shapes, halves, symmetry* [Computer program]. Palo Alto, CA: Dale Seymour Publications.
8. Clements, D. H., & Sarama, J. (1997). *Shapes — Mathematical thinking* [Computer program]. Palo Alto, CA: Dale Seymour Publications.
9. Clements, D. H., Sarama, J. (1996). *Trips* [Computer program]. Palo Alto, CA: Dale Seymour Publications.
10. Clements, D. H., Sarama, J. (1996). *Geo-Logo Picturing Polygons* [Computer program]. Palo Alto, CA: Dale Seymour Publications.
11. Clements, Douglas H. & Meredith, Julie Sarama (1995). *Geo-Logo Turtle Paths* [Computer program]. Palo Alto, CA: Dale Seymour Publications.
12. Clements, Douglas H. & Meredith, Julie Sarama (1995). *Geo-Logo Ships & Grids* [Computer program]. Palo Alto, CA: Dale Seymour Publications.
13. Clements, Douglas H. & Meredith, Julie Sarama (1995). *Tumbling Tetrominoes* [Computer program]. Palo Alto, CA: Dale Seymour Publications.
14. Clements, Douglas H. & Meredith, Julie Sarama (1995). *Turtle math* [Computer program]. Montreal, Quebec: LCSJ.

Publications: Other

1. Day-Hess, C. A., Clements, D. H., & Sarama, J. (2020, July 14, 2020). *Reimagine calendar activities in early childhood classrooms* [Blog post]. Development and Research in Early Mathematics Education. Retrieved from <https://dreme.stanford.edu/news/reimagine-calendar-activities-early-childhood-classrooms>
2. Clements, D. H., & Sarama, J. (2019, Sept. 24, 2019). *What are learning trajectories?* [Blog post]. STEMIEEE. Retrieved from <https://stem4ec.ning.com/blog/learning-trajectories>
3. Sarama, J., Clements, D., Nielsen, N., Blanton, M., Romance, N., Hoover, M., Staudt, C., Baroody, A., McWayne, C., and McCulloch, C., (2018). *Considerations for STEM education from PreK through grade 3*. Waltham, MA: Education Development Center, Inc. Retrieved from <http://cadrek12.org/resources/considerations-stem-education-prek-through-grade-3>.
4. Gaddy, J., Sarama, J., & Clements, D. H. (2017, January 2). Getting a leg up on education is all about engagement. Media Planet. Retrieved from <http://www.educationandcareernews.com/learning-tools/getting-a-leg-up-on-education-is-all-about-engagement>
5. Clements, D. H., & Sarama, J. (2017, June 5, 2017). *Learning math, science and technology is good for preschoolers*. Child & Family Blog. Retrieved from <https://childandfamilyblog.com/learning-math-science-technology-preschoolerschoolers/>

6. Duke, Nell K., Sarama, Julie, and Clements, Douglas H. Illustrated by Scott SanGiacomo. (2016). *All about castles*. Connect4Learning, Lewisville, NC.
7. Clements, D. H., & Sarama, J. (2014, March 3, 2014). Play, mathematics, and false dichotomies. Blog from *Preschool matters...today!*, W. Steven Barnett (Ed.). Retrieved from <http://preschoolmatters.org/2014/03/03/play-mathematics-and-false-dichotomies>.
8. Clements, D. H., & Sarama, J., & Baroody, A. J. (2013). *Background research on early mathematics*. Washington, DC: National Governors Association. Retrieved from <http://www.nga.org/cms/home/nga-center-for-best-practices/meeting--webcast-materials/page-education-meetings-webcasts/col2-content/main-content-list/strengthening-early-mathematics.html>.
9. Clements, D. H., & Sarama, J., Baroody, A. J., Mincic, M., & Cruz, B. (2013). *State Early Childhood and Pre-K-3 Policies and Best Practices for Early Mathematics*. Washington, DC: National Governors Association.
10. Clements, D. H., & Sarama, J. (2013). *Math in the early years* [ECS Research Brief: The progress of educational reform]. Denver CO: Education Commission of the States.
11. Clements, D. H., & Sarama, J. (2004). [Review of] *FUNDamentally MATH: 1 + 1 through Algebra*. *Teaching Children Mathematics*, 10, 429-430.
12. Sarama, J. (2001). [Review of] *MindTwister Math, Gr. 3 and 4*. *Teaching Children Mathematics*, 7(8), 486.
13. Sarama, J. (2001). [Review of] *Math Mysteries Measurement Grades 4-7*. *Teaching Children Mathematics*, 7(8), 486; 488.
14. Sarama, J. (2000). [Review of] *The baby-sitters club series: 4th grade learning adventures*. *Teaching Children Mathematics*, 7(2), 116.
15. Sarama, Julie (1995). [Review of] *Geometry Inventor*. *Teaching Children Mathematics*, 1(6) 394-395.
16. Clements, Douglas H. & Meredith, Julie Sarama (1993). Design of a research-based logo environment for elementary geometry. In N. Estes & M. Thomas (Ed.), *Rethinking the roles of technology in education* (pp. 679-681). Cambridge, MA: Massachusetts Institute of Technology.
17. Clements, Douglas H. & Meredith, Julie Sarama (1992). *Research on Logo: Effects and efficacy*. New York: Logo Foundation.

Presentations/Conferences: International

1. Keynote, SAARMSTE, Southern African Association for Research in Maths, Science and Technology Education, Johannesburg, South Africa, January 12-14, 2021. *Learning Trajectories as Disruptors of Early Math* (done remotely due to COVID-19).

2. Keynote, Erno Lehtinen Online Colloquium, University of Turku, Finland, November 18, 2020. *From Cognition to Curriculum to Scale: Learning Trajectories for Early Math.*
3. Keynote and workshop, Mathematics in Early Childhood, Institut für Erziehungs- und Bildungswissenschaft der Karl-Franzens-Universität Graz, Graz, Austria, March 13-14, 2020. *The Surprising Importance of Early Mathematics and Children's mathematical thinking, birth to third grade: Using the Learning and Teaching with Learning Trajectories tool.*
4. Norwegian National Centre of Mathematics Education at NTNU (Norwegian University of Science and Technology) in Trondheim, Norway, March 5-6, 2020. *The Surprising Importance of Early Mathematics and Children's mathematical thinking, birth to third grade: Using the Learning and Teaching with Learning Trajectories tool.*
5. Two Keynotes, II(nd) International Conference on Primary Education, Bodrum, Turkey, October 23 to 27, 2019. *From Children's Thinking to Curriculum to Professional Development to Scale: Research Impacting Early Math Practice and The Surprising Importance of Early Mathematics.*
6. Keynote, MERGA Conference 2019, Perth, Australia, June 30, 2019 - July 7, 2019. *From Children's Thinking to Curriculum to Professional Development to Scale: Research Impacting Early Math Practice.*
7. Workshop, MERGA Conference 2019, Teacher Presession, Perth, Australia, June 30, 2019 - July 7, 2019. *Subitizing: The Neglected Quantifier.*
8. Keynote, OECTA Kindergarten Conference, Toronto, ON, November 28-29, 2017. *Kindergarten Mathematics...and More.*
9. Keynote, Oman Mathematics Day III: International conference on: Trends in innovative Mathematics Curricula - Highlights on Early Mathematics Education, Muscat Oman, November 20, 2017 - November 22, 2017. *Learning Trajectories — A Curriculum Core for Early Mathematics and a second presentation, STEM starts early: Grounding science, technology, engineering, and math education in early childhood.*
10. International Group for the Psychology in Mathematics Education (IGPME), Singapore, July 16-21, 2017. *Scale Up in Early Mathematics.*
11. Ontario Kindergarten Conference, ETFO - Elementary Teachers' Federation of Ontario, Toronto, Ontario, Canada, June 1-3, 2017. *Learning Trajectories — The Core of Standards, Teaching, and Learning and The Surprising Importance of Early Math.*
12. Keynotes at the Mathematics and the Young Child Conference, Santiago, Chile: *Learning Trajectories — The Core of Standards, Teaching, and Learning*

and *The Surprising Importance of Early Mathematics*, and one workshop, *Geometry for Young Children*, November 15, 2016.

13. Keynotes at the 13th International Congress on Mathematics Education, *Development of Foundational Cognitions and Concepts of Measurement in the Early Years and Young Children's Conceptualization and learning Of Geometric Figures*, Hamburg, Germany July24-31, 2016.
14. Keynote, *Turning Desirable into Possible: The Learning Trajectories Perspective*, at the International Conference, "Possible – Desirable – Plausible, Different contexts and different perspectives in research on preschool mathematics," Gothenburg, Sweden April 16 2015.
15. Keynote, 8th International mathematical creativity and giftedness conference, International Group for Mathematical Creativity and Giftedness, July 28, 2014. *Learning from the Gifted Math Program*.
16. The Building Blocks of Early Mathematics: Learning Trajectories for Young Children [Webinar], for *Early Childhood Investigations*, May 14, 2014. 2,100 participants.
<http://www.earlychildhoodwebinars.com/presentations/the-building-blocks-of-early-mathematics-learning-trajectories-for-young-children-by-julie-sarama-and-douglas-clements/>.
17. SRCD Biennial Meeting, Seattle, WA, April 17-21 2013. Three presentations: *Sustainability of Fidelity to a Prekindergarten Mathematics Curriculum and Professional Development Scale-Up Intervention; A Pre-K Mathematics Curriculum: Impacts on Early Literacy; and Effects of Preschool Mathematics Interventions on Achievement in Mathematics, Literacy, and Language and on Social-Emotional Development*.
18. SRCD Biennial Meeting, Montreal, Quebec, Canada, March 31-April 2, 2011. Five presentations: *Scaling Up Successful Interventions in Diverse Environments: Longitudinal Analyses of an Early Math; A Factorial Invariance Analysis of the Early Mathematics Assessment With Prekindergarteners; Longitudinal Impacts On Rapid Automatized Naming: Results From a Large CRT on a PreKindergarten Mathematics Curriculum; Measurement of Fidelity of Implementation to a Core Technology Component and Effects on Outcomes in a Pre-K Mathematics; Psychometrics and Validation of the Short Form of an Early Mathematics Assessment*.
19. The 11th International Congress on Mathematical Education (ICME), Monterrey, Mexico, July 7-13, 2008. Led Topical Study Group 1 and presented a paper, *Scaling up Early Mathematics: The TRIAD Project*.
20. The 21st Conference of the International Group for the Psychology of Mathematics Education. The Netherlands, Summer, 2001. *Composition of geometric figures*. With D. Clements and D. Wilson.

21. The 21st Conference of the International Group for the Psychology of Mathematics Education. Lahti, Finland: University of Helsinki, July, 1997. *Young children's concepts of shape*. With D. Clements and S. Swaminathan.
22. The Annual Meeting of the International Conference of Technology in Education. Orlando, FL, March, 1995. *Effecting Change: Inhibitors and Facilitators of a Computer-based Curriculum Innovation*. With D. Clements.
23. The Annual Meeting of the International Conference of Technology in Education. Orlando, FL, March, 1995. *Turtle Math: Liberating Learners of Mathematics*. With D. Clements.
24. Asia Pacific Information Technology in Training and Education Conference and Exhibition, 1994, Brisbane, Australia. *Investigations in geometry with Geo-Logo*.
25. International Council for Technology in Education, March, 1993. Two presentations: *Design of a research-based logo environment for elementary geometry* (with Douglas H. Clements)
26. International Group for the Psychology of Mathematics Education, Sixteenth Annual Conference, Durham, New Hampshire, August 1992. *Design of a logo environment for elementary geometry*.

Presentations/Conferences: National

1. Annual Meeting of the American Educational Research Association (AERA), Orlando, FL (but conducted virtually), April 9-12, 2021. **Seven** papers: *Homogeneity of Relations between Mathematics and Executive Function Competencies in the Context of an Intervention; Exploring Relations between Classroom-level Strategic Diversity and Achievement in Early Mathematics; Classroom Strategy Diversity and Student Growth in Early Mathematics: A Multigroup Latent Growth Analysis; Learning Trajectories as the Core of Teacher Professional Development; Development of a Measure of Early Mathematics Achievement based on Learning Trajectories; Effects of a Math Intervention on Dual Language Learners and Children with Disabilities; and Moving Across a Counting Learning Trajectory Strengthens Arithmetic Strategies for Kindergarteners At-Risk for Math Difficulties*.
2. Keynote, 2020 Consortium on Early Childhood Intervention Impact, Laguna Beach, CA, November 4-6, 2020. *Learning Trajectories From Cognition to Scale*.
3. Three presentations, NAEYC Annual Conference & Expo (National Association for the Education of Young Children), Anaheim, CA, November 4-7, 2020 (cancelled due to pandemic). *Children's mathematical thinking, birth to third grade: Using the Learning and Teaching with Learning*

Trajectories tool to teach geometry, STEAM Ahead with Interdisciplinary Teaching and Learning: Science, Technology, Engineering, Arts, Math... and Literacy and Social-emotional Development, and Supporting Early Mathematics Development: Research-Based Practices and Resources for Teacher Educators, Teachers, and Family-facing Professionals.

4. Keynote, Curriculum and Instruction Steering Committee Symposium, Fresno, CA, June 26, 2020. *What Counts in Teaching and Learning Early Math? Learning Trajectories for Young Children.*
5. Annual Meeting of the American Educational Research Association (AERA), San Francisco (but conducted virtually), April 17-21, 2020. **Ten papers:** *Learning Trajectories as Boundary Objects for Psychometricians, Learning Scientists and Practitioners in Mathematics Education, Pre-School Mathematics Intervention Can Significantly Improve Student Learning Trajectories Through Elementary School, Research in Practice to Improve PK-grade 3 Math Learning, What Teaching Moves Support Young Children's In-The-Moment Ability to Solve Simple Addition and Subtraction Problems?, Examining the Efficacy of a Learning Trajectories Intervention for Arithmetic: A Sequential Explanatory Mixed-Method Approach, Young children's mathematical patterning competencies: Insights and future directions, Does a Learning Trajectory Facilitate Learning to Recognize the Core Unit of a Repeating Pattern?, An Empirical Study to Investigate the Relative Difficulty of Repeating Pattern Structures for Preschoolers, Strategy Diversity in Early Mathematics Classrooms, and Mathematics and Executive Function Competencies in the Context of Interventions: A Quantile Regression Analysis.*
6. Keynote, AERA Institute on Statistical Analysis for Education Policy: Development of Math Skills in Early Childhood, American Educational Research Association, Laguna Beach, CA, February 23-24, 2020. *Early Math Development.*
7. Two presentations, NAEYC Annual Conference & Expo (National Association for the Education of Young Children), Nashville, TN, November 20-23, 2019. *Children's mathematical thinking, birth to third grade: Using the Learning and Teaching with Learning Trajectories tool to teach arithmetic!* and *Differentiating teaching in early math: Environments, interactions, and activities for playful, developmentally appropriate learning.*
8. Webinar for Association of State Supervisors of Mathematics (ASSM), October 16, 2019. *[LT]²—Learning and Teaching with Learning Trajectories Tool: Support for Professional Learning.*
9. Webinar for Association of State Supervisors of Mathematics (ASSM), Sept 10, 2019. *[LT]²—Learning and Teaching with Learning Trajectories Tool: Support for Professional Learning.*
10. Two presentations, NAEYC PDI (National Association for the Education of Young Children's Professional Development Institute, Long Beach, CA,

- June 2-5, 2019. *Self-paced learning about children's math thinking, with playful activities: Using the Learning and Teaching with Learning Trajectories tool and Supporting early mathematical development everywhere: Resources for teacher educators, teachers, caregivers, and families.*
11. Annual Meeting of the American Educational Research Association (AERA), Toronto, Ontario, Canada, April 3-9, 2019. Four papers: *Does a Learning Trajectory Facilitate Early Patterning Intervention?; Length Measurement in the Early Years: Teaching and Learning with Learning Trajectories; Efficacy of Learning Trajectory-Based Number and Shape Computer Games for Young Children; and Comparing a Learning Trajectory Approach to a Teach-to-the-Target Approach in Kindergarten Arithmetic.*
 12. Annual Meeting of the National Council of Teachers of Mathematics (NCTM), San Diego, CA., April 2-7, 2019. *Honoring the Student in Designing Instruction: Learning and Teaching with Learning Trajectories.*
 13. The Biennial Meeting of the Society for Research in Child Development (SRCD), Baltimore, MD, March 20-23, 2019. Five papers (4 in one symposium): *Interdisciplinary teaching across multiple domains: Efficacy of the C4L (Connect4Learning) Curriculum; Investigating Children's Structure, Interpretation and Representation of Space with an Intervention for Measuring Prism Volume; Investigating Children's Structure, Interpretation and Representation of Space with an Intervention for Measuring Prism Volume; Young Children's Actions on Length Measurement Tasks: Strategies and Cognitive Attributes; and Length Measurement in the Early Years: Teaching and Learning with Learning Trajectories.*
 14. Annual SREE Conference, Society for Research on Educational Effectiveness, Washington, D.C. (March 7, 2016 - March 9, 2019). *Comparing a Learning Trajectory Approach to a Teach-to-the-Target Approach in Early Arithmetic.*
 15. NAEYC Annual Conference & Expo, Washington (National Association for the Education of Young Children), DC, November 15-18, 2018. Three presentations: *Self-paced learning about children's math thinking, with playful activities: The Learning and Teaching with Learning Trajectories tool; Supporting early mathematics development: Research-based practices and resources for teacher educators, teachers, and families; and C4L: STEAM ahead with interdisciplinary teaching and learning.*
 16. NAEYC's National Institute for Early Childhood Professional Development, Austin, TX, June 10-13 2018. An open-access Internet application for professional development in early math: *The Learning and Teaching with Learning Trajectories tool.*
 17. NSF DRK-12 PI Meeting, , Washington, DC, June 7-8, 2018. Three presentations—two papers: *The Ongoing Process of Validating and/or Adapting Learning Trajectories Over Time and Achieving Broader Impacts of*

- Research Through Dissemination* (refereed); and chair of one roundtable discussion, *DRK-12 Early Learning Topical Group Synthesis Feedback*.
18. 45th Annual National Head Start Conference and Expo, Anaheim, CA, April 25-27, 2018. Two presentations: *Self-paced learning about children's math thinking, with playful activities: The Learning and Teaching with Learning Trajectories Tool* and *Social-emotional Development STEAMS Ahead*.
 19. Annual Meeting of the National Supervisor of Teachers of Mathematics (NCSM), Washington, D.C., April 23-24, 2018. *Learning Trajectories at the Core: Effective and Powerful Professional Development*.
 20. Annual Meeting of the National Council of Teachers of Mathematics (NCTM), Washington, D.C., April 23-25, 2018. Three presentations: *Length Measurement in the Early Years: Teaching with Learning Trajectories*; *Review of Assessments of Mathematics in Early Childhood*; and *Review of Early Childhood Mathematics Curricular Activities*.
 21. Annual Meeting of the American Educational Research Association (AERA), New York, NY, April 13-17, 2018. Two presentations: *Evaluating the Efficacy of a Learning Trajectory for Early Shape Composition*; and *Comprehensive Review of Assessments of Mathematics in Early Childhood*.
 22. Spring 2018 SREE Conference. February 28-March 2, 2018, Washington, DC. *Evaluating the Efficacy of a Learning Trajectory for Early Shape Composition*.
 23. Keynote. CCSSO Networked Improvement Community Project, Arlington, VA, January 22, 2018. *The Surprising Importance of Early Mathematics and How to Support It*.
 24. Keynote. Annual AMTE (Association of Mathematics Teacher Educators) Conference, Houston, Texas, February 7-10, 2018. *Collaborating to Align Programs with the Standards for Preparing Teachers of Mathematics*.
 25. Annual AMTE (Association of Mathematics Teacher Educators) Conference, Houston, Texas, February 7-10, 2018. *Scalable Professional Development in Early Mathematics: The Learning and Teaching with Learning Trajectories Tool*.
 26. Annual AMTE (Association of Mathematics Teacher Educators) Conference, Houston, Texas, February 7-10, 2018. *Elaborations of the Standards for the Preparation of Early Childhood Teachers of Mathematics*.
 27. NCSL (National Conference of State Legislatures), Denver, CO, September 18, 2017. *STEM in the Early Years*.

28. Quality Rating and Improvement Systems (QRIS) National Meeting, Dallas, TX, June 27-29, 2017. *Connect4Learning: Teaching and Learning the Interdisciplinary Way*.
29. National Academies of Sciences, Engineering, and Medicine—Stakeholder convening on early science, technology, engineering, and mathematics learning and young dual language learners, Washington, DC, May 24-25, 2017. *Reflections on the Report, Promoting the Educational Success of Children and Youth Learning English: Promising Futures and Implications for DLL/EL Children's STEM Learning*.
30. Annual Meeting of the American Educational Research Association (AERA), San Antonio, TX, April 27-May 1, 2017. Four in a symposium: *The TRIAD Scale-up Model and Its Effects: Teaching Early Mathematics with Trajectories and Technologies, Effects of Implementation Variables on an Early Mathematics Intervention Based on Learning Trajectories, Sustainability—Longitudinal effects of an early mathematics intervention based on learning trajectories on teachers' practices, and Persistence of Effects of an Early Mathematics Intervention Based on Learning Trajectories on Students' Math*. Also, Roundtable, *Examination of Children's Strategy Use on Geometric Measurement Assessment Items*.
31. The Biennial Meeting of the Society for Research in Child Development (SRCD), Austin, TX, April 6-8, 2017. Seven papers (four in one symposium) and one discussant role. Symposium, "Longitudinal Evaluation of a Scale-up Model: Critical Components and Effects on Persistence and Sustainability," with four papers: *The TRIAD Scale-up Model and Its Effects: Teaching Early Mathematics with Trajectories and Technologies, Effects of Implementation Variables on an Early Mathematics Intervention Based on Learning Trajectories, Sustainability—Longitudinal effects of an early mathematics intervention based on learning trajectories on teachers' practices, and Persistence of Effects of an Early Mathematics Intervention Based on Learning Trajectories on Students' Math*; Three additional papers: *Effects on Mathematics and Executive Function of a Mathematics and Play Intervention Versus Mathematics Alone; Risky Business: Correlation and Causation in Longitudinal Studies of Skill Development; and Play it High, Play it Low—Examining the Reliability and Validity of a New Observation Tool to Assess Children's Make-Believe Play*. Discussant on *The Impact of Charter School Enrollment on Low-Income Children's Early Math Trajectories*.
32. Research Pre-session, National Council of Teachers of Mathematics, San Antonio, TX, April 3-5, 2016. *Evaluating the Efficacy of Learning Trajectories in Early Math—Experiment 1*.
33. Annual Meeting of the ProLEER (Professional Learning network to advance Early Education Reform) Network, Cambridge, MA, March 27-29, 2017. *Curriculum Research Framework and the TRIAD Scale-up Model*.

34. Invited Presentation, U.S. Dept. of Education, Washington, DC, November 29, 2016. *Connect4Learning—Interdisciplinary Teaching and Learning*.
35. NAEYC Annual Conference & Expo, Washington, DC, November 2-5, 2016. Two presentations: *The building blocks of early childhood mathematics* and *C4L (Connect4Learning): Teaching and Learning the Interdisciplinary Way*.
36. Keynote and multiple presentations. The Administration for Children and Families' (ACF) National Research Conference on Early Childhood, Washington, DC, July 11-13, 2016. Keynote/Master Lecture: *Promoting Early Math: Advances in Understanding Who to Teach What*; Presentations: *Changes in Teacher Practices: The Effects of Three Professional Development Models*, *Preparing for Success in School - What Matters the Most*, *The Role of Content and Coaching Expertise in the Effectiveness of Coaching: Results from a Large Cluster Randomized Trial*, *Persistent Effects for Early Childhood Educational Programs: Longitudinal Follow-Up from Three Randomized Trials*
37. TSR (Texas School Ready) Summer Institute, *The Surprising Importance of Early Mathematics*, Children's Learning Institute, Austin, TX. (July 5, 2016 - July 6, 2016).
38. Learning Trajectories for Young Children [Webinar], for *Early Childhood Investigations*, June 15, 2016. 750 participants.
39. 43rd Annual Head Start Conference & Expo, *Scalable Professional Development in Early Mathematics: The Learning and Teaching with Learning Trajectories Tool and The C4L (Connect4Learning) Project: Teaching and Learning the Interdisciplinary Way*, Head Start, Washington, DC. (May 17, 2016 - May 18, 2016).
- 43rd Annual Head Start Conference & Expo, , " Head Start, Washington, DC. (May 17, 2016 - May 18, 2016).
40. Presentation, 2016 Leadership Connections National Conference, Wheeling, IL, May 13, 2016. *Connect4Learning—Interdisciplinary Teaching and Learning*. (invited)
41. White House STEM Summit, *The Surprising Importance of Early Mathematics*, White House, Washington, DC. (April 21, 2016).
42. Plenary Session, National Council of Teachers of Mathematics, San Francisco, CA, April 13-16, 2016. Presentation: *The Common Core in Early Math and Developmental Appropriateness*.
43. Research Presession, National Council of Teachers of Mathematics, San Francisco, CA, April 12-13, 2016. Two papers: *How do children really measure? – Strategy use on assessment tasks*; and *Structuring two and three-dimensional space: A focus on representations*.

44. Annual Meeting of the American Educational Research Association, Washington, DC, April 7-12, 2016. Three presentations, *The Role of Forgetting in the Fade-Out of the Effect of an Early Mathematics Intervention; Effects of an Early Mathematics Intervention on Stable and Time-Varying Components of Mathematics Achievement; and Discovery-Based STEM Learning 2.0: Are We There Yet?*
45. Annual SREE Conference, *Effects of TRIAD on Mathematics Achievement: Long-Term Impacts?*, and *A Randomized Control Trial Evaluating the Effectiveness of Computer Assisted Instruction in Numeracy on Math Outcomes for Monolingual English Speaking Kindergartners from Title 1 Schools*, Society for Research on Educational Effectiveness, Washington, D.C. (March 2, 2016 - March 5, 2016).
46. Keynote, Society for Research and Human Development, Denver, CO, March 18, 2016. *The Surprising Importance of Early Mathematics*.
47. SREE — Society for Research on Educational Effectiveness Annual Conference, Washington, DC, Feb. 3-5, 2016. Two presentations: *Effects of TRIAD on Mathematics Achievement: Long-Term Impacts?* and *A Randomized Control Trial Evaluating the Effectiveness of Computer Assisted Instruction in Numeracy on Math Outcomes for Monolingual English Speaking Kindergartners from Title 1 Schools* (refereed)
48. Presentation, AMTE (Association of Mathematics Teacher Educators), Irvine, CA, January 28-30, 2016. *Learning to learn from teaching: A different kind of professional development outcome*.
49. Keynote, EHR Research on Early Childhood Education Open House, National Science Foundation, Washington DC, December 4, 2015. *Interdisciplinary Early Childhood Education: Math, Science, Literacy, and Social-Emotional Development*
(https://www.nsf.gov/events/event_summ.jsp?cntn_id=137006&org=NSF)
50. IES PI Conference, *The Curriculum Research Framework*, Washington, DC. (December 10, 2015 - December 11, 2015).
51. NCCTM Conference, *The Surprising Importance of Early Math*, North Carolina Council of Teachers of Mathematics, Greensboro NC, Nov. (November 5, 2015 - November 6, 2015).
52. ITCM Annual Conference, *Early and Later Math*, Illinois Council of Teachers of Mathematics, Peoria IL. (October 22, 2015 - October 24, 2015).
53. Research Presession of the National Council of Supervisors of Mathematics, Boston, MA, April 13-14, 2015. Presented a paper, *Professional development that supports teachers' use of learning trajectories*.

54. Annual Meeting of the American Educational Research Association, Chicago, IL, April 16-20, 2015. Presented two papers, *Children's Estimation and Measurement of Area*, and *Which kindergarten Common Core domains are most predictive of later mathematics achievement?*,
55. Biennial Meeting, Philadelphia, PA, March 19-21, 2015. Six papers. *Math and math + scaffolded play interventions: Analyses of main effects on development of math competence and executive function; Using Q-matrix & Rule-Space to refine cognitive attributes and test items when developing an assessment of geometric measurement; C4L (Connect4Learning): Interdisciplinary Early Childhood Education—Math, Science, Literacy, and Social-emotional Development; Longitudinal Evaluation of a Scale-up Model for Teaching Mathematics: Persistence of Effects Three Years after Treatment; Early math skills and later achievement: Which kindergarten common core domains most predict fifth grade math achievement?; Longitudinal evaluation of a scale-up model for teaching mathematics with trajectories and technologies: Persistence of effects.*
56. SREE — Society for Research on Educational Effectiveness Annual Conference, Washington, DC, March 5-7, 2015. Four presentations: *Great Expectations: The Effect of High Teacher Expectations on the Mathematics Achievement of African American Students in a Preschool Math Intervention; Preventing Preschool Fadeout through Instructional Intervention in Kindergarten and First Grade; Fadeout in an Early Mathematics Intervention: Same Old Schools or Underlying Skills?; What Specific Preschool Math Skills Predict Later Math Achievement?* Also, chair of the session, *Education and Social Inequality Interventions to Improve Math Skills.* (refereed)
57. Congressional Briefing and U.S. Department of Education Briefing, *Building Blocks and TRIAD Research and Development Projects*, U.S. Congress, Washington, DC. (September 24, 2015 - September 25, 2015).
58. Four Corners Early Childhood Education Conference, *The Building Blocks of Early Math*, Four Corners Early Childhood Education Organization, Farmington, NM. (September 11, 2015 - September 12, 2015).
59. Presentation, invited, National Council of State Legislatures (NCSL) Early Learning Fellows Meeting, Minneapolis, MN, August 19, 2014. *Math in the Early Years: The Surprising Importance of Early Mathematics.*
60. Two presentations, Head Start Research Conference (HSRC), Washington, DC, June 7-8, 2014. *Transitions, Continuity, and Alignment in Early Childhood and Innovations in Early Childhood STEM Curriculum and Professional Development.*
61. Annual Meeting of the American Educational Research Association, Chicago, IL, April 16-20, 2014. Presented two papers, *Children's Estimation*

and Measurement of Area, and Which kindergarten Common Core domains are most predictive of later mathematics achievement?.

62. Presentation, ACF Meeting, Early Elementary School Experiences & Sustaining the Effects of Early Childhood Education, Washington, DC, May 19-20, 2014. *Building Blocks and TRIAD: Sustainability and Persistence of Effects.*
63. Research Pre-session of the National Council of Teachers of Mathematics, New Orleans, LA, April 7-10, 2014. Presented four papers, “*Measurement Club*” – *Helping to Fill an Educational Gap; Research to Practice: Measuring Length in First Grade; Interactions among Learning Trajectories for Length, Area, and Volume Measurement; Conceptualizing and Supporting Development: Learning Area Measurement in School.*
64. Annual Meeting of the American Educational Research Association, Philadelphia, PA, April 3-7, 2014. Presented seven papers, *From Research to Practice: Measuring Length in First Grade; Supporting Children’s Learning of Area Measurement: A Microgenetic Study; Self-Regulation Impacts (Executive Function, Working Memory) of an Intervention Synthesizing Early Mathematics and Make-Believe Play; Approaches to Incorporating Late Pretests in Experiments: Evaluation of Two Early Mathematics and Self-Regulation Interventions; Impacts on Mathematics of an Intervention Synthesizing Early Mathematics and Make-Believe Play; Impacts on Oral Language of an Intervention Synthesizing Early Mathematics and Make-Believe Play; Policies Supporting Scale-Up of Interventions for Children at Risk in Early Mathematics;* and co-chair of one session, *Efficacy of an Intervention Synthesizing Scaffolding Designed to Promote Self-Regulation With an Early Mathematics Curriculum.*
65. Planned, Managed, Conducted, Wrote Background Briefs, and Keynoted at the NGA Early Math Expert Roundtable, Washington, DC, November 21, 2013.
66. NAEYC Annual Conference & Expo, Washington, DC, November 21, 2013. Two presentations: *Report of the NRC Committee on Early Mathematics and Science, Math, Literacy, and Social-emotional Development in Early Childhood— Can We Do It All?*
67. Keynote, 9th Annual NALFO National Summit on the State of Latino Education, Washington, DC, Oct. 1, 2013. *Planting the Seed: STEM in Early Learning.* (invited)
68. SREE — Society for Research on Educational Effectiveness Annual Conference, Washington, DC, Sept. 27-28, 2013. Two presentations: *Longitudinal Evaluation of a Scale-Up Model for Teaching Mathematics with Trajectories and Technologies: Persistence of Effects Three Years after the Treatment and Approaches to Incorporating Late Pretests in Experiments:*

- Evaluation of Two Early Mathematics and Self-Regulation Interventions.*
(refereed)
69. Scaling Educational Innovations, National Science Foundation, Arlington, Virginia, July 11, 2013. *Evaluation of a Scale-up Model: Effects and Diffusion.*
 70. Keynote, 2013 National Forum on Education Policy, Education Commission of the States, St. Louis, MO. June 25, 2013 - June 27, 2013. *The surprising importance of early mathematics.*
 71. Mathematical Instruction for Perseverance, Spencer Foundation and the National Science Foundation, Chicago, Illinois, June 23, 2013 - June 24, 2013. *Evaluation of a Scale-up Model for Children of Poverty: Persistence of Effects and Effects on Perseverance.*
 72. Transitions, Continuity and Alignment: Preschool to Third Grade, Administration for Children and Families, Washington, D.C., June 18, 2013 - June 19, 2013. *Evaluation of a Scale-up Model for Children of Poverty: Transitions to Primary School.*
 73. Jean Piaget Society Conference, American Educational Research Association, Chicago, IL, June 6, 2013 - June 8, 2013. *Framing and Revising a Hypothetical Learning Trajectory for Volume Measurement.*
 74. Annual Meeting of the American Educational Research Association, San Francisco, CA, April 28-May 1, 2013. Three papers: *Scale Up at the Level of Multiple School Districts: Lessons Learned From Multiple IERI- and IES-Funded Projects; Framing and Revising a Hypothetical Learning Trajectory for Volume Measurement: Integrating Longitudinal Case Studies and the Rasch Model; and Evaluation of a Scale-up Model for Children of Poverty: Longitudinal Study of Persistence of Effects.*
 75. Annual Meeting of the National Council of Teachers of Mathematics, Denver, CO, April 17-20, 2013. Two presentations: *Math Lessons from Research and Computers in Early Childhood: Getting the Best of All Worlds.*
 76. Research Pre-session, National Council of Teachers of Mathematics, Denver, CO, April 15-17, 2013. Two papers: *Creating cognitively diagnostic adaptive assessments using learning trajectories; Framing and Revising a Hypothetical Learning Trajectory for Area Measurement; .*
 77. Keynote, Association of the State Supervisors of Mathematics 2013 Annual Meeting, Denver, CO, Apr 13, 2013. *The Building Blocks of Mathematics.* (invited)
 78. National Center for Early Child Education (NCRECE) Quality Improvement Meeting, Washington, DC, Mar 19, 2013. *Early mathematics: Standards, Assessment, and Curriculum.* (invited)

79. Aligning and Implementing Birth-3rd Grade Learning Standards: A Strong Foundation for College and Career Readiness, Co-sponsored by the NGA Center for Best Practices and the Council of Chief State School Officers Philadelphia, PA, Mar 15, 2013. *The surprising importance of early mathematics*. (invited)
80. SREE — Society for Research on Educational Effectiveness Annual Conference, Washington, DC, Mar 9, 2013. *Sustainability of Fidelity of Implementation Over Time, in the Context of a Prekindergarten Mathematics Curriculum and Professional Development Scale-Up Intervention*. (refereed)
81. IES Principal Investigators' Annual Meeting, Washington, DC, Mar 5-6, 2013. *Longitudinal effects of a research-based model of scale-up*. (refereed)
82. NSF DR K-12 PI Meeting, , Washington, DC, June 13-15, 2012. Three papers. *Using Rule Space and Poset-based Adaptive Testing Methodologies to Identify Ability Patterns in Early Mathematics and Create a Comprehensive Mathematics Ability Test; Learning Progressions and Trajectories in Research: Methodological and Theoretical Challenges; Meeting the Challenges and Reaping the Benefits of Longitudinal Research Studies in Math and Science for DR K-12 Projects*; and one poster, *Connect 4 Learning: An interdisciplinary preschool curriculum*. (refereed)
83. Annual Meeting of the National Council of Teachers of Mathematics, Philadelphia, PA, April 25-27, 2012. *Research in early mathematics*.
84. Research Pre-session, National Council of Teachers of Mathematics, Philadelphia, PA, April 22-24, 2012. Three presentations: *Teachers' Learning of Learning Trajectories, Measurement Club: Filling a Developmental Gap, and Effects of Building Blocks games on young children's learning*.
85. Annual Meeting of the American Educational Research Association, Vancouver, BC, Canada, April 15-18. Three papers: *From Rasch Models to Rule Space and Poset-Based Adaptive Testing, Connect4Learning: Early Childhood Education in the Context of Mathematics, Science, Literacy, and The U.S. Building Blocks and TRIAD Scale-up Projects*.
86. SREE — Society for Research on Educational Effectiveness Annual Conference, Washington, DC, March 7, 2012. *The Efficacy of an Intervention Synthesizing Scaffolding Designed to Promote Self Regulation with an Early Mathematics Curriculum: Effects on Executive Function*. (refereed)
87. Invited speech, U.S. Department of Education, Washington, DC, March 13, 2012. *Critical Early Mathematics from Cognitive Science to Scale*.
88. Keynote presentation, National Science Board's meeting of the Committee on Education and Human Resources (CEH), Washington, DC, Dec 13, 2011. *Educational research: From basic to applied and beyond*.

89. NAEYC Annual Conference & Expo, Orlando, FL, November 1-2, 2011. *Connect4Learning: Early Childhood Education in the Context of Mathematics, Science, and Literacy.*
90. PME-NA, Psychology in Mathematics Education. Two presentations: *Learning Trajectories: Foundations for Effective, Research-based Education.* Washington, DC, October 19-23, 2011. (invited)
91. SREE — Society for Research on Educational Effectiveness, First Annual Math & Science Conference. Four presentations: (1) *Early Childhood Education Symposium: Development, Implementation, and Evaluation of Preschool Mathematics and Science Intervention Models*; (2) *Pathways from R&D to Marketplace Dissemination*; (3) *Early Mathematics Education For All: Evaluation of an Intervention Using Multiple Methodologies* and (4) *Outcomes, and Assessment in Early Childhood Mathematics and Science.* Washington, DC, September 7-9, 2011. (two invited, two refereed)
92. SREE — Society for Research on Educational Effectiveness Second Annual Conference, *Early Childhood Education Symposium: The Effects of Pre-Kindergarten and Pre-Kindergarten Curricula on Emergent Math and Literacy Skills*, and a poster, *Evaluation of the TRIAD Scale-up Model: Longitudinal evaluation.* Washington, DC, March 4, 2011. (refereed)
93. Institute of Education Sciences Research Conference, Washington, DC, June 28-30, 2010. Presentations: *Scaling Up TRIAD: Teaching Early Mathematics for Understanding with Trajectories*, and *Efficacy of Computerized Earobics and Building Blocks Instruction for Kindergarteners from Low SES, Minority Backgrounds: Year 2 Results.*
94. Head Start's Tenth National Research Conference, Washington, DC, June 21-22, 2010. Two presentations: *Report of the NRC Committee on Early Childhood Mathematics: Evidence of Effective Policies and Practices for Math Education*, and *Children's Understanding of Mathematics and Science Concepts in the Preschool Years.*
95. The Annual Meeting of the American Educational Research Association, Denver, CO, May 1-4, 2010. Five presentations: *Hypothetical Learning Trajectory for Length in the Early Years*; *Life After RCTs: Addressing the Issue of Palatability of Instructional Interventions: The TRIAD / Building Blocks Scale-Up Project: Effectiveness and Diffusion*; *Evaluation of a Developmental Progression for Length Measurement Using the Rasch Model*; *Scaling Up Successful Interventions in Diverse Environments: Longitudinal Analyses of an Early Math Intervention*; *Effects of an Early Math Curriculum on Early Literacy and Language: Impacts, Mediators, and Moderators.*
96. Research Pre-session, National Council of Teachers of Mathematics, San Diego, CA, April 18-19, 2010. Three presentations: *Defining and*

Implementing Learning Trajectories as Research Tools; Math Learning in Early Childhood: Paths Toward Excellence and Equity— NRC; Tools of the Trade.

97. Annual Meeting of the National Council of Teachers of Mathematics, San Diego, CA, April 19-23, 2010. *The National Research Council Report on Early Mathematics—Implications for Teaching.*
98. Invited Plenary Symposium, 2010 Meeting of the Society for Research on Educational Effectiveness, Washington, DC, March 4-5, 2010. *Evaluation of an Intervention based on the Curriculum Research Framework: Scale Up.*
99. Keynote presentation, 2010 Meeting of the Society for Research on Educational Effectiveness, Washington, DC, March 4-5, 2010. *Interaction of Research, Practice, and Policy in Mathematics Education.*
100. NAEYC's National Institute for Early Childhood Professional Development, Charlotte, NC, June 14-16, 2009. Playing with Math—Research on the Relationships between Play and the Learning and Teaching of Mathematics.
101. Annual Meeting of the National Council of Teachers of Mathematics, Washington, D.C., April 23-28, 2009. Presentation: Mixing Assessment and Instruction: Getting Children to Think and Talk about Measurement Meaningfully and Mathematics Specialists.
102. Research Pre-session of 2009 National Council of Teachers of Mathematics, Washington, D.C., April 20-22, 2009. Two presentations: Scaling Up High-Quality Mathematics for All Children and Mathematics Specialists and Report of the NRC Committee on Early Childhood Mathematics.
103. The Annual Meeting of the American Educational Research Association, San Diego, CA, April 12-18. Three papers: Scaling Up Successful Interventions: Multidisciplinary Perspectives; Hypothetical Learning Trajectory for Length: A Multidisciplinary Study, and Children's Abstraction of Iterative Units to Measure Linear Space: A Learning Trajectory for Teaching Length.
104. The 2009 Annual Meeting of the National Association for Research in Science Teaching, Garden Grove, CA, April 17-21. Hypothetical Learning Trajectory for Measurement: A Multidisciplinary Study.
105. The Biennial Meeting of the Society for Research in Child Development, Denver, CO, April 1-4, 2009. Three papers: Evaluation of a Model for Scaling Up Interventions: Teaching Early Math for Understanding with Trajectories and Technologies; A PreK Mathematics Curriculum: Impacts on Early Literacy; Early Intervention Research and Children's School Readiness: What Role Does Curriculum Play?

106. SREE — Society for Research on Educational Effectiveness Second Annual Conference, Experimental Evaluation of a Scale-up Model for Teaching Mathematics with Trajectories and Technologies, Washington, DC, February 2, 2009. (invited)
107. Conference for the Advancements of Mathematics Teaching, CAMT 2008: Steering Mathematics Towards Excellence, Dallas, TX, July 9, 2008. Teaching math: 7 successful strategies. (invited)
108. Institute of Education Sciences Research Conference, Washington, DC, June 10-12, 2008. Scaling Up TRIAD: Teaching Early Mathematics for Understanding with Trajectories and The impact of an intensive PreK mathematics curriculum on emerging literacy and language skills.
109. NAEYC's National Institute for Early Childhood Professional Development, New Orleans, LA, June 8-10, 2008. A technology triad: scaling up with computers for teachers, children, and teacher trainers.
110. Research Presession of the 86th Annual Meeting of the National Council of Teachers of Mathematics, Salt Lake City, UT, March, 2007. Two presentations: Scaling Up TRIAD: Teaching Math with Trajectories and Technologies and Mathematics Specialists and Coaches: Research and Issues from the Field.
111. Two presentations, the 86th Annual Meeting of the National Council of Teachers of Mathematics, Salt Lake City, UT, March, 2007. Making Research-based Innovations Work in Large Urban Settings: Lessons Learned, and Computers in Early Childhood: The Best of All Possible "Worlds"
112. The Annual Meeting of the American Educational Research Association, New York, March, 2007. Two presentations: Scaling-Up Interventions: The Case of Mathematics, Mentoring and Coaching as Critical Components of Teacher Growth in Implementing and Preschool Mathematics Curriculum.
113. Institute of Education Sciences Research Conference, Washington, DC, June 6-8, 2007. Scaling Up TRIAD: Early Descriptive Data and Innovative Software for Professional Development and Experimental Evaluation of a Research-based PreK Math Curriculum.
114. The Annual Meeting of the American Educational Research Association, Chicago, IL, April, 2007. Development of a Measure of Early Mathematics Achievement Using the Rasch Model (with Xiufeng Liu and Douglas H. Clements).
115. The Annual Meeting of the American Educational Research Association, Chicago, IL, April, 2007. NCTM's "Curriculum Focal Points".

116. The Annual Meeting of the American Educational Research Association, Chicago, IL, April, 2007. How Should Preschoolers Spend Their Day? Integration and Conflicts Across Developmental Areas: Objectives and Educational Importance.
117. The Biennial Meeting of the Society for Research in Child Development, Boston, MA, March 2007. Symposium/paper: Concreteness and Cognitive Development: New Perspectives on a Classic Developmental Issue.
118. The Biennial Meeting of the Society for Research in Child Development, Boston, MA, March 2007. Development of a Measure of Early Mathematics Developmental Progressions Using the Rasch Model.
119. The Biennial Meeting of the Society for Research in Child Development, Boston, MA, March 2007. Fostering Development Among Teachers and Children in Literacy, Math, Science and Social Development.
120. The Biennial Meeting of the Society for Research in Child Development, Boston, MA, March 2007. Effects of Early Childhood Interventions on Children's School Readiness: Findings From an Evaluation Study of Preschool Curricula.
121. Research Presession of the 85th Annual Meeting of the National Council of Teachers of Mathematics, Atlanta, GA, March, 2007. Research and the Curriculum Focal Points.
122. The 85th Annual Meeting of the National Council of Teachers of Mathematics, Atlanta, GA, March, 2007. Representing math ideas: Learning trajectories for young children and their teachers.
123. The 85th Annual Meeting of the National Council of Teachers of Mathematics, Atlanta, GA, March, 2007. Powerful representations of mathematics for early childhood.
124. The 85th Annual Meeting of the National Council of Teachers of Mathematics, Atlanta, GA, March, 2007. Curriculum Focal Points and Curricula in Early Childhood..
125. The Annual Meeting of the National Association for the Education of Young Children (NAEYC), Atlanta, GA, Nov. 8-11, 2006. The Building Blocks mathematics project: Evaluating a research-based preschool mathematics curriculum in low- and mixed-income communities.
126. Institute of Education Sciences Research Conference, Washington, DC, June 14-16, 2006. Scaling Up the Implementation of a Pre-Kindergarten Mathematics Curriculum: Teaching for Understanding with

- Trajectories and Technologies and Scaling Up TRIAD: Teaching Early Mathematics for Understanding with Trajectories and Technologies.
127. Research Presession of the 84th Annual Meeting of the National Council of Teachers of Mathematics, St. Louis, April, 2006. Randomized Trials in Mathematics Education Research (organizer and presenter).
 128. The 84th Annual Meeting of the National Council of Teachers of Mathematics, St. Louis, April, 2006. Research-based technology: Software for early and primary education.
 129. The 84th Annual Meeting of the National Council of Teachers of Mathematics, St. Louis, April, 2006. Prekindergarten math for disadvantaged children: Research on Building Blocks.
 130. The Annual Meeting of the American Educational Research Association, San Francisco, CA, April, 2006. Rethinking Concrete Manipulatives and Concrete Ideas.
 131. Research Presession of the 84th Annual Meeting of the National Council of Teachers of Mathematics, St. Louis, April, 2006. Randomized Trials in Mathematics Education Research (organizer and presenter).
 132. The 84th Annual Meeting of the National Council of Teachers of Mathematics, St. Louis, April, 2006. Research-based technology: Software for early and primary education.
 133. The 84th Annual Meeting of the National Council of Teachers of Mathematics, St. Louis, April, 2006. Prekindergarten math for disadvantaged children: Research on Building Blocks.
 134. The Annual Meeting of the American Educational Research Association, San Francisco, CA, April, 2006. Preschool Curriculum Evaluation Research.
 135. The Annual Meeting of the American Educational Research Association, San Francisco, CA, April, 2006. Experimental Evaluation of the Effects of Research-Based Preschool Mathematics Curricula.
 136. The Annual Meeting of the American Educational Research Association, San Francisco, CA, April, 2006. Randomized Trials in Curriculum Research: The Case of Mathematics.
 137. The Annual Meeting of the American Educational Research Association, San Francisco, CA, April, 2006. Scaling Up the Implementation of a Pre-Kindergarten Mathematics Curricula: A Program Evaluation.

138. The Annual Meeting of the National Association for the Education of Young Children, Washington, DC, Dec. 6-10, 2005. Longitudinal study of Pre-K mathematics. Paper, component of the Preschool Curriculum Evaluation Research Project. With the entire national cohort group.
139. National Math Symposium, Edutopia, Skywalker Ranch, CA, October 21 2005. Technology and Mathematics. (invited)
140. The NAEYC's National Institute for Early Childhood Professional Development, Miami Beach, FL, June 5-8, 2005. Closing the gap in early math: Research shows that curriculum matters.
141. The Biennial Meeting of the Society for Research in Child Development, Atlanta, GA, April 2005. Symposium/paper: Curricula As Intervention: Preliminary Results From the Preschool Curriculum Evaluation Research (PCER) Program: National and Site Specific Data.
142. The Biennial Meeting of the Society for Research in Child Development, Atlanta, GA, April 2005. Symposium/paper: Curricula As Intervention: Results From Randomized Control Trials.
143. The Biennial Meeting of the Society for Research in Child Development, Atlanta, GA, April 2005. Electronic Poster: Effects of a Research-Based Preschool Mathematics Curriculum.
144. The Biennial Meeting of the Society for Research in Child Development, Atlanta, GA, April 2005. Poster: A hypothetical learning trajectory in practice: Young children's composition of geometric figures.
145. The Annual Meeting of the American Educational Research Association, Montreal, Canada, April, 2005. Mathematics knowledge of low-income entering preschoolers.
146. The Annual Meeting of the American Educational Research Association, Montreal, Canada, April, 2005. Longitudinal study of a preschool mathematics curriculum. A paper presented as part of a symposium, Preschool Curriculum Evaluation Research (PCER) 2002: Lessons learned from two years of curriculum implementation. Young Children and Creative Technologies.
147. Research Pre-session of the 83rd Annual Meeting of the National Council of Teachers of Mathematics, Anaheim, CA, April, 2005. Closing the Gap: Interventions in Early Childhood Mathematics Education.
148. The 83rd Annual Meeting of the National Council of Teachers of Mathematics, Anaheim, CA, April, 2005. PreK Mathematics Across Diverse Settings—Issues of Scaling Up.

149. The Annual Meeting of the American Educational Research Association, San Diego, CA, April, 2004. Young children's composition of geometric figures: A learning trajectory. A paper presented as part of a symposium organized by Sarama & Clements, *The Use of Learning Trajectories in Research-based Mathematics Curriculum Development, Assessment, and Professional Development*. With D. Clements.
150. The Annual Meeting of the American Educational Research Association, San Diego, CA, April, 2004. *Curriculum Research: Toward a Framework for "Research-based Curricula*. With D. Clements.
151. The Annual Meeting of the American Educational Research Association, New Chicago, IL, April, 2003. *Effects of a Research-based Preschool Mathematics Curriculum: Summative Evaluation of the Building Blocks Project*. With D. Clements.
152. The Annual Meeting of the National Association for the Education of Young Children, Chicago, IL, Nov. 5-9, 2003. *Preschool Curriculum Evaluation Research Project*. With the entire national cohort group.
153. The Annual Meeting of the National Association for the Education of Young Children, Chicago, IL, Nov. 5-9, 2003. *Teaching the Young Thinker: Integrating Learning, Development, and High-Quality Practices in Mathematics*. With D. Clements, M. E. Bardsley, and J. Copley.
154. The Annual Meeting of the American Educational Research Association, New Chicago, IL, April, 2003. *Effects of a Research-based Preschool Mathematics Curriculum: Summative Evaluation of the Building Blocks Project*. With D. Clements.
155. Research Pre-session of the 81st Annual Meeting of the National Council of Teachers of Mathematics, San Antonio, April, 2003. *Multiple Perspectives on an Early Childhood Mathematics Curriculum Research Project*. With D. Clements (organizer and presenters), and M. E. Bardsley, M. E. Spitler
156. The Annual Meeting of the National Association for the Education of Young Children, New York, NY, November 19-22, 2002. *The Building Blocks of early childhood math: Hands-on and computer activities*. With D. Clements and M.E. Bardsley.
157. The Annual Meeting of the American Educational Research Association, New Chicago, IL, April, 2003. *Effects of a Research-based Preschool Mathematics Curriculum: Summative Evaluation of the Building Blocks Project*. With D. Clements.
158. DLM Summer Institute, Houston, TX, July 23-25, 2002. *The Building Blocks of ECE Mathematics*. With D. Clements.

159. Institute for Early Childhood Mathematics, Rutgers University in New Brunswick, NJ, July 9-11, 2002. *The Building Blocks of ECE Mathematics*. With D. Clements.
160. Head Start's 6th National Research Conference, Washington, D. C., June 19-22, 2002. *Research on early childhood mathematics: Building Blocks*.
161. NAEYC's National Institute for Early Childhood Professional Development, Albuquerque, NM., June 9-12, 2002. *The Building Blocks of Professional Development in ECE Mathematics*. With D. Clements.
162. Research Pre-session of the 80th Annual Meeting of the National Council of Teachers of Mathematics, Las Vega, NV, April, 2002. *The Use of Learning Trajectories in Curriculum Development and Research*. With D. Clements (organizer and presenters)
163. The 80th Annual Meeting of the National Council of Teachers of Mathematics, Las Vega, NV, April, 2002. *Building Blocks: Play, Manipulatives, and Computers for PreK-2 Mathematics*. With D. Clements
164. The Annual Meeting of the American Educational Research Association, New Orleans, LA, April, 2002. *Geometric composition and decomposition in the early years*. With D. Clements and D. Wilson.
165. The Annual Meeting of the American Educational Research Association, New Orleans, LA, April, 2002. *Evaluation and comparison of four geometric turn interfaces*. With D. Clements.
166. Keynote address: The Annual Meeting of the National Association for the Education of Young Children. November 2, 2001, Anaheim, CA. *Teaching What Counts: Math and Computers in Early Childhood Teacher Education*. With D. Clements
167. The Annual Meeting of the National Association for the Education of Young Children. November 1-3 (repeated 3 times), Anaheim, CA. *Building Blocks and Math Makers software*. With D. Clements
168. NAEYC's National Institute for Early Childhood Professional Development, Washington, D. C., June 10-13, 2001. *Engaging young children in mathematics: The Conference on Standards for Preschool and Kindergarten Mathematics Education*. With D. Clements and Ann-Marie DiBiase (invited)
169. NAEYC's National Institute for Early Childhood Professional Development, Washington, D. C., June 10-13, 2001. *An Investigation into Professional Development in Early Childhood Mathematics*. With Mary Elaine Spitler (invited)

170. The Annual Meeting of the American Educational Research Association, Seattle, WA, April, 2001. *Computers in early childhood mathematics*. With D. Clements.
171. Research Presession of the 79th Annual Meeting of the National Council of Teachers of Mathematics, Orlando, FL, April 2-4, 2001. The role of research in technology-intensive curricula and tools - comments from a case study.
172. Research Presession of the 79th Annual Meeting of the National Council of Teachers of Mathematics, Orlando, FL, April 2-4, 2001. *Research-based Standards for PreK-2 Mathematics: Findings from a National Conference*. (Organizer and presenter.) With D. Clements.
173. The 79th Annual Meeting of the National Council of Teachers of Mathematics, Orlando, FL, April, 2001. *Principles and Standards for Prekindergarten through Grade 2 and Building Blocks: Activities that Meet the Goals*.
174. The 79th Annual Meeting of the National Council of Teachers of Mathematics, Orlando, FL, April, 2001. Linking research and the early childhood mathematics standards of Principles and Standards for School Mathematics. With D. Clements & A. DiBiase.
175. The Annual Meeting of the National Association for the Education of Young Children. November 8, 2000, Atlanta, GA. *The New Preschool to Grade 2 Math Standards and Building Blocks— Activities that Meet the Goals*. With D. Clements
176. The Annual Meeting of the National Association for the Education of Young Children. November 8, 2000, Atlanta, GA. *Planning for Professional Development in Pre-School Mathematics: Meeting the Challenge of the New Math Standards for a Diverse Population*.
177. ExxonMobil Annual Conference, Falls Church VA, September, 2000. *Conference on Early Childhood Mathematics Standards*. With Douglas H. Clements and Ann-Marie DiBiase (invited)
178. The Ninth Annual Conference of the National Association for the Education of Young Children's National Institute for Early Childhood Professional Development. June 4-7, 2000, San Francisco, CA. *Professional Development in Early Childhood Mathematics: Meeting the Challenge of Standards 2000*. With Douglas H. Clements and Mary Elaine Spitler (senior presenter; refereed)
179. Conference on Standards for Preschool and Kindergarten Mathematics Education, Arlington, VA. May 2000. Technology in early

- childhood mathematics: Building Blocks as an innovative technology-based curriculum. (invited)
180. The Annual Meeting of the American Educational Research Association, New Orleans, LA, April, April, 2000. Composition of geometric figures by young children. With D. H. Clements and L. Rothenberg.
 181. The 78th Annual Meeting of the National Council of Teachers of Mathematics, San Francisco, CA, April, 2000. Linking research and the new early childhood mathematics standards. With D. H. Clements, organizer.
 182. The 78th Annual Meeting of the National Council of Teachers of Mathematics, San Francisco, CA, April, 2000. Early childhood mathematics and technology.
 183. The Annual Meeting of the National Association for the Education of Young Children (NAEYC), Toronto, ON, Canada, Nov., 1998. *NAEYC's position on technology—what does research say?*. With D. Clements.
 184. The Annual Meeting of the American Educational Research Association, San Diego, CA, April, 1998. *Students' development of concepts of two-dimensional space*. With D. Clements.
 185. The Annual Meeting of the American Educational Research Association, San Diego, CA, April, 1998. *Evaluation of an educational environment designed on research-based principles*. With D. Clements.
 186. Research Presession, Annual Meeting of the National Council of Teachers of Mathematics, Washington, DC, March 1998. Constructivist software: developing computer environments based on theoretical models.
 187. The 76th Annual Meeting of the National Council of Teachers of Mathematics. Washington, DC, April, 1998. *Research-based constructivist software environments*. With D. Clements
 188. The 75th Annual Meeting of the National Council of Teachers of Mathematics. Minneapolis, MN, April, 1997. *The use of a computer manipulative in elementary mathematics*. With D. Clements.
 189. The 75th Annual Meeting of the National Council of Teachers of Mathematics. Minneapolis, MN, April, 1997. *Meeting the technological challenge: Transforming early and primary math with computers*. With D. Clements.

190. The Annual Meeting of the American Educational Research Association, Chicago, IL, March, 1997. *Young children's concepts of shape*. With Douglas H. Clements, M. A. Z. Hannibal, S. Swaminathan, D. Schrier.
191. The Annual Meeting of the American Educational Research Association, Chicago, IL, March, 1997. *The effects of Shapes, a computer manipulative, on children's psychological/mathematical processes*. With Douglas H. Clements and E. B. Vukelic.
192. The Annual Meeting of the American Educational Research Association, Chicago, IL, March, 1997. *Effectiveness of a synthesized curriculum on kindergarten children's geometric thinking*. With S. Swaminathan, D. Schrier.
193. The Eighteenth Annual Meeting of the North America Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Panama City, FL, October 1996. *Development of students' spatial thinking in a curriculum unit on geometric motions and area*. With D. H. Clements, M. Battista.
194. The Eighteenth Annual Meeting of the North America Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Panama City, FL, October 1996. *The role of a computer manipulative in fostering specific psychological/mathematical processes*. With D. H. Clements, E. Vukelic.
195. The Eighteenth Annual Meeting of the North America Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Panama City, FL, October 1996. *Development of turn and turn measurement concepts in a computer-based instructional unit*. With D. H. Clements, M. Battista, S. Swaminathan.
196. The Eighteenth Annual Meeting of the North America Chapter of the International Group for the Psychology of Mathematics Education (PME-NA), Panama City, FL, October 1996. *Multidisciplinary research perspectives on an implementation of a computer-based mathematics innovation*. With D. H. Clements, J. Henry, S. Swaminathan.
197. NCTM Research Pre-session, Annual Meeting of the National Council of Teachers of Mathematics, San Diego, April 1996. *A year in the life of Turtle Math: Multiple perspectives on an implementation of a mathematics innovation*. With D. H. Clements, J. Henry, S. Swaminathan, E. Vukelic, & L. Steffe
198. The Annual Meeting of the American Educational Research Association, New York City, April 1996. *Development of concepts of*

- geometric figures in a specially-designed Logo computer environment.
With D. Clements and M. T. Battista
199. The Annual Meeting of the American Educational Research Association, New York City, April 1996. Development of students' spatial thinking in a curriculum unit on geometric motions and area. With D. Clements and M. T. Battista
 200. National Educational Computing Conference. Baltimore, MD, June 1995. Technology in the "Investigations in Number, Data, and Space" project. With D. Clements.
 201. National Educational Computing Conference. Baltimore, MD, June 1995. Asserting the role of programming in the intellectual and creative development of students. With D. Clements.
 202. National Educational Computing Conference. Baltimore, MD, June 1995. Logosium: Logo research, Past, present future. With D. Clements.
 203. National Educational Computing Conference. Baltimore, MD, June 1995. Workshop: Integrating Software From Investigations in Number, Data and Space Project. With D. Clements.
 204. National Educational Computing Conference. Baltimore, MD, June 1995. Workshop: Turtle Math: A Computer Environment and Activities for Elementary Mathematics. With D. Clements.
 205. The Annual Meeting of the American Educational Research Association, San Francisco, April 1995. Turn concepts in a computer-based instructional unit. With D. Clements and M. T. Battista
 206. The Annual Meeting of the American Educational Research Association, San Francisco, April 1995. Network of Influences in an Implementation of a Mathematics Curriculum Innovation. With D. Clements and J. Henry
 207. The 73rd Annual Meeting of the National Council of Teachers of Mathematics. Boston, MA, April, 1995. Unique contributions of computers to learning and teaching geometry: Multiple perspectives. With D. Clements & M. T. Battista. (refereed; Clements organized, proposed, and presented at this symposium)
 208. The 73rd Annual Meeting of the National Council of Teachers of Mathematics. Boston, MA, April, 1995. Students' development of length concepts in a computer-based Investigations unit With D. Clements & M. T. Battista.

209. The 73rd Annual Meeting of the National Council of Teachers of Mathematics, CLIME presentation. Boston, MA, April, 1995. Innovative Logo environments. With D. Clements. (invited)
210. International Group for the Psychology in Mathematics Education—North American Chapter, Baton Rouge, LA, November 5-8, 1994. Students' development of length measurement concepts using a specially-designed turtle graphics environment.
211. International Group for the Psychology in Mathematics Education—North American Chapter, Baton Rouge, LA, November 5-8, 1994. Turtle Math: A Logo environment grounded in research. With D. Clements (Sarama was first author and presenter).
212. International Group for the Psychology in Mathematics Education—North American Chapter, Baton Rouge, LA, November 5-8, 1994. Computers environments for spatial-numerical concepts. With D. Clements & M. Battista.
213. National Educational Computing Conference. Boston, MA, June 1994. Logosium: Logo Research: Thresholds.
214. National Educational Computing Conference. Boston, MA, June 1994. A computer environment for elementary geometry and spatial sense. With D. Clements & M. T. Battista.
215. National Educational Computing Conference. Boston, MA, June 1994. Turtle Math: A version of Logo and activities for elementary mathematics. With D. Clements .
216. The 72nd Annual Meeting of the National Council of Teachers of Mathematics, CLIME presentation. Indianapolis, IN, April 14, 1994. A new software environment for geometry, grades 3-6. (invited)
217. The Annual Meeting of the American Educational Research Association, New Orleans, April 1994. Students' development of length measurement concepts using a specially-designed turtle graphics environment.
218. Geometry Center Software Conference, Minneapolis, MN July 15 - July 18. Design of a Logo Environment for Elementary Geometry. (invited)
219. Geometry Center Software Conference, Minneapolis, MN July 15 - July 18. Students' development of length and turn measurement concepts in a computer-based unit on geometric paths. (invited)

220. The Annual Meeting of the American Educational Research Association, Geometry Working Group, Atlanta, GA, April 1993. Students' construction of length and angle measure. (invited)

Presentations/Conferences: State and Regional

1. Presentation, Curriculum and Instruction Steering Committee Symposium, Monterey, CA, February 20, 2020. *The Importance of Interdisciplinary Approaches for Early Childhood Programs.*
2. Invited presentation, Los Angeles County Office (DOE), Los Angeles, CA, November 2, 2019, *Interdisciplinary teaching across multiple domains: Efficacy of the C4L (Connect4Learning) Curriculum.*
3. Two presentations, NCTM Regional Conference, Salt Lake City, UT, October 17-19, 2019. *Teaching Geometry to Young Children: Parts and Properties and Differentiate Powerfully and Joyfully—the Learning and Teaching with Learning Trajectories Tool.*
4. NCTM Regional Conference, Boston, MA, September 24-26, 2019. *LT-Squared—Learning and Teaching with Learning Trajectories Tool: Support for Professional Learning.*
5. Two presentations and one informal chat, Symposium on Early Childhood Mathematics Development: Professional Development, Portland, OR, July 29-30, 2019. *Making More of Math: Math + Self Regulation.*
6. Three presentations, 2019 Early Childhood STEM Institute, Region 9 He Start Association, Pasadena, CA, March 25-27, 2019. *Self-paced learning about children's math thinking, with playful activities: The Learning and Teaching with Learning Trajectories Tool, Teaching Geometry to Young Children: From Whole Shapes to Parts and Properties, and Social-emotional Development STEAMs Ahead.*
7. Keynote and presentation, Indiana Early Childhood Conference, Indianapolis, IN, March 14-15, 2019. *The Surprising Importance of Early Math (Keynote) and STEAM Ahead with Interdisciplinary Learning and Teaching.*
8. Keynote, School Readiness Symposium, Ready at Five, Ellicott City, MD, December 5, 2018. *Interdisciplinary Education for the Youngest Learners.*
9. Two presentations, NCTM Regional Conference, Seattle, WA, November 29-30. *Teaching Geometry to Young Children: Parts and Properties and LT-Squared: Learning and Teaching with Learning Trajectories Tool: Support for Professional Learning.*
10. Two presentations, one featured, NCTM Regional Conference, Kansas City, MO, November 1-3. *Teaching Geometry to Young Children: Parts and*

Properties and LT-Squared: Learning and Teaching with Learning Trajectories Tool: Support for Professional Learning.

11. Three-hour keynote. Orange County Department of Education Annual Meeting, Orange County, CA, Oct. 11-12, 2018. *The Interdisciplinary Approach to Pre-K: Connect4Learning.*(invited)
12. Five presentations, , Kansas MTSS (Multi-Tier System of Supports) Symposium, Wichita, KS, September 5-6, 2018. *The Building Blocks of Early Math* (repeated), *The Learning and Teaching with Technology Tool [LT]²* (repeated); *The Surprising Importance of Early Mathematics: Curriculum and Teaching.* (invited)
13. Two-day workshop, Coach Institute, City of Phoenix Human Services Department Education Division, Phoenix, AZ, May 22-23, 2018. *Coaching early mathematics.*
14. Full-day workshop, Early Math Professional Learning Network, Puget Sound ESD, Renton, WA, May 17, 2018. *Patterning and Pre-algebra.*
15. Presentation, Western States Leadership Conference, Tempe, AZ, February 12-16, 2018. *Creating a Responsive Learning Environment.*
16. Keynote, 2018 RTI/MTSS Effective Instruction Conference, Anchorage, Alaska. January 26-28, 2018. *Elevating Effective Instruction.*
17. Keynote presentation, Kansas MTSS (Multi-Tier System of Supports) Symposium, Wichita, KS. *The Surprising Importance of Early Mathematics: Curriculum and Teaching.* (invited)
18. ECEA, Early Childhood Education Association of Colorado annual conference, Denver, CO, September 22, 2017. *The Surprising Importance of Early Math.*
19. *Keynote and breakout session*, 2016 Iowa Association for the Education of Young Children Spring Leadership Institute, Des Moines, Iowa, May 7, 2016. *The Surprising Importance of Early Math and The Building Blocks of Early Math.*
20. Keynote, Ohio AEYC (Association for the Education of Young Children), Sandusky Ohio, April 21-23, 2016. *The Building Blocks of Early Math.* (invited)
21. Keynote, Rocky Mountain Early Childhood Conference (RMECC), Denver, CO, February 20, 2016. *The Building Blocks of Early Math.* (invited)
22. Keynote, Wisconsin Mathematics Council Annual Conference, Green Lake, Wisconsin, May 1, 2014. *The Common Core and Learning Trajectories.*

23. Early Childhood Stem Conference, Costa Mesa, CA, February 6-8, 2014. *The Building Blocks of Early Mathematics* and participation on the opening panel. (invited)
24. Keynote and 2nd talk. North Carolina Council of Teachers of Mathematics, Greensboro, North Carolina, November 1, 2013. Keynote: *The Building Blocks of Early Mathematics*. Presentation: *Teaching Math to Young Children: The Paths of Early Mathematics* (invited)
25. Keynote, Kindergarten Conference, Boston, MA. Sept. 4, 2013. *TRIAD Scale Up and the Building Blocks of Early Mathematics*.
26. Jennings and Rebecca Jones Foundation, Murfreesboro, TN. June 4-5, 2013. *Critical Thinking with the Common Core: K-2*.
27. National Council of Teachers of Mathematics, Dallas, TX, October 11-12, 2012. *Math Lessons from Research* (invited)
28. Colorado Council of Teachers of Mathematics, Denver, CO, October 27-28, 2011. Two presentations: *Math Lessons from Research*; *The Building Blocks of Early Mathematics* (invited)
29. Presentation, Center for Cognitive Science, Buffalo, NY, April 23, 2008. *The TRIAD Project*.
30. Presentation Association of Math Teachers of New Jersey, Newark, NJ, October 26, 2007. *The Building Blocks of Math*.
31. Presentation, Western New York Regional Mathematics Conference, Clarence, NY, October 20, 2007. *Curriculum Focal Points and Research*.
32. The Conference for the Advancement of Math Teaching Annual Conference, San Antonio, TX, June 28-30, 2007, Standards, NCTM's Curriculum Focal Points, and the Building Blocks of Math, and Software for Learning Mathematics: The Best of all Possible Worlds.
33. Presentation, NYS Association for the Education of Young Children, Westchester, NY, May 4, 2007. *The Building Blocks of Early Mathematics and The Building Blocks mathematics project: Evaluating a research-based preschool mathematics curriculum in low- and mixed-income communities*.
34. One of two main presenters, SUNY Training Strategies, Math: What's Play Got to Do with It?, a videoconference delivered by satellite to 5,000 child care providers at sites throughout NYS, June 24, 2004, 7 p.m. to 9 p.m.

35. WNY Regional Mathematics Consortium, South Buffalo, NY, October 14, 2003. Teaching That Counts: Mathematics in the Early Years . With Douglas H. Clements (invited)
36. Two presentations, DLM Summer Institute. *The DLM Express Math Lessons and Technology in the Early Years*, July 23, 2003. With D. Clements (invited)
37. Early Childhood Leadership Institute, Washington, DC, June 27-28, 2003. *The Building Blocks of Early Childhood Math*. With D. Clements, M. E. Bardsley, and R. O'Dell
38. Keynote speakers, Creating & Maintaining High Quality Preschools: Implementing the Early Childhood Expectations in Abbott Preschools, Union, NJ, May 30, 2003. *The Building Blocks of Early Childhood Math*. With D. Clements (invited)
39. Connecticut State Dept. of Education Conference on Early Mathematics, Hartford, CT, May 19, 2003. *DLM Math*. With D. Clements (invited)
40. Keynote presentation, "Defining quality in early mathematics education," regional conference at Rutgers University, supported by the Carnegie Corp. *Building Blocks: Research-based early childhood mathematics curricula*. New Brunswick, NJ, July 10-11, 2002. With D. Clements (invited)
41. Keynote and one additional presentation, NYU-Corning Head Start Conference. *Math and Technology in the Early Years*. Geneva, NY, June 15, 2001. With D. Clements (invited)
42. Second Annual New York Graduate Mathematics Education Research Conference. 12/4/20. Four presentations: Students' development of geometric concepts in a specially-designed computer environment; Technology in mathematics education in elementary school; Visions for technology in mathematics education; and Redesigning Logo: Turtle Math as a new elementary mathematics environment. With D. H. Clements. (invited)
43. Detroit Area Council of Teachers of Mathematics Conference, Plymouth-Canton, MI. October 5, 1995. *Macintosh software for K-8 mathematics*.
44. Second Annual New York Graduate Mathematics Education Research Conference. 12/4/20. Four presentations: Students' development of geometric concepts in a specially-designed computer environment; Technology in mathematics education in elementary school; Visions for technology in mathematics education; and Redesigning Logo: Turtle Math as a new elementary mathematics environment. With D. H. Clements. (invited)

45. Illinois Council of Teachers of Mathematics 47th annual meeting and pre-conference. October 12, 1995. *Turtle Math: A computer environment and activities for elementary mathematics*. With D. H. Clements. (invited)
46. Association of Mathematics Teachers of New York State, Buffalo, NY. November 13, 1993. *Geo-Logo: Geometry Investigations*. With D. Clements and S. McMillen.
47. Seventh Annual 1993 New Jersey Educational Computing Conference, Montclair State College, Montclair, New Jersey, March 25-26, 1992. Four presentations or panels, including: *Investigations in Number, Data, and Space*, *Geo-Logo: A research-based Logo for elementary geometry* (with D. Clements), *Tumbling Tetrominoes* (with D. Clements)

Presentations/Conferences: Local

1. Keynote, Brookhill Institute Annual Conference, Brookhill Institute of Mathematics, Waukesha WI, April 25, 2016. *The Surprising Importance of Early Math*.
2. Keynote and Breakout Presentations, Tulsa Public Schools, Tulsa, OK, Oct. 15, 2015. *The Building Blocks of Math*.
3. 8th Annual Fair Share Nation, *Building Blocks of Early Math*, University of Denver, Denver, CO. (September 26, 2015).
4. Presentation, Pioneer Symposium, Denver, CO, Sept. 25, 2015. *The Surprising Importance of Early Math*.
5. Presentation, El Centro Central Schools, El Centro, CA, February 19, 2015. *The Building Blocks of Math*.
6. Presentation, Denver Metro District Board of the CAEYC, Denver, CO, February 22, 2014. *The Building Blocks of Math*.
7. Presentation, 8th Annual Fair Share Nation, Denver, CO, September 26, 2015. *The Building Blocks of Early Math*.
8. Presentation, University of Denver's Pioneer Symposium, Denver, CO, September 26, 2015. *The Surprising Importance of Early Math*.
9. Presentation, Denver Metro District Board of the CAEYC, Denver, CO, February 22, 2014. *The Building Blocks of Math*.
10. Two presentations, Marsico Institute for Early Learning and Literacy Community Lecture Series, University of Denver, Denver, CO, Oct 22-23, 2013. *Current State of of Early Childhood Mathematics Education; Myths and Misconceptions in Early Mathematics*.

11. Three presentations, Center for Science, Mathematics, and Computer Education and College of Education and Human Sciences, University of Nebraska-Lincoln, Oct 7-8, 2013. *Current State of the Field of Early Childhood Mathematics Education; Lessons from Research: The Building Blocks of Math; and Building Blocks and Other Math Curricula Preschool to Primary Grades.*
12. Diocese of Buffalo, ACS. March 26, 2010, Amherst, NY: *Lessons from Research.*
13. GSE Education Outreach Lecture, October 11, 2007 , Buffalo, NY. *Digital Kids, Analog Schools: The Importance of Integrating Technology into the Curriculum.*
14. Diocese of Buffalo. Friday, October 28, 2005, Buffalo, NY. *Mathematics Education: Lessons from Research.*
15. Graduate School of Education's Continuing Professional Education Breakfast Lecture Series (K-12). Thursday, October 20, 2005, Buffalo, NY. *Scaling up successful educational interventions.*
16. Presentation for the Williamsville Central Schools. *Geometry, transformations, and spatial sense in early childhood.* Williamsville, NY, Wednesday, August 31, 2005.
17. A series of presentations / workshops for the Buffalo Public Schools APLN Teachers. *Number sense in first grade.* Buffalo Public Schools, Buffalo, NY January 28, 2005, March 18, 2005.
18. Presentation for University of Buffalo's University and the World Lecture Series. *Early Mathematics Learning and Teaching.* Clemens Hall, UB, Buffalo, NY, 12/4/20. With D. Clements.
19. West Seneca Central Schools, West Seneca, NY, January 17, 1996, January 24, 1996. Workshops: *Educational change with Turtle Math.* With D. Clements.
20. University Iowa,, November 11 1995. Presentation: *Educational innovation with mathematics software.*
21. University North Carolina, Asheville, North Carolina, June 24-30 1995. Workshop: *Educational innovation with Turtle Math and other mathematics software.* With D. Clements.

Awards

1. Promoted to Distinguished University Professor, University of Denver, 6/2018.
2. National Science Foundation Facilitator's Choice award for video on the DU/ISU NSF-funded "Children's Measurement" project

<http://stemforall2016.videohall.com/presentations#/winners/id=winners> .

3. 2015 Innovator Award to Dr. Julie Sarama and Dr. Douglas H. Clements, given by Kaplan Early Learning Company, 11/19/2015.
4. Technology & Learning Software of the Year award, 1995, in the category "Math," for *Turtle Math*, an educational software program designed, developed, and programmed by Douglas H. Clements & Julie Sarama.

UNIVERSITY TEACHING AND SERVICE
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Teaching

LAI 693 "Technology in Mathematics Education"

LAI 540 "Improving Instructional in Elementary Mathematics Education"

Dissertation and Thesis Committees

Doctoral Committees Chaired

Jessica Lerner, 2013-

Elvira Khasanova, October 2015

Douglas Van Dine, 2014

Elizabeth Walker, 2014

Mary Elaine Spitler, 2009

Nosisi Piyose, 2009

Janka Szilagyi, 2007

YongJoon Park, 2008 (co-chair)

Bardsley, Mary Ellen (co-chair), April 2006

Robin O'Dell, April 2005

Anne E. Izydorzak, 2002

Doctoral Committees, Member

Carmen Brown

Jennifer McDonel, 2013

Young Doo Choo, 2013

Vidya Thirumurthy, 2003

David C. Wilson, 2002

Master Theses/Projects Chaired = (insert number)

List Names

Date Defended

James Bialsik

May 2005

Julia Haywood

May 2005

Service

Member, Morgridge College of Education's Leadership Team (substitute for Sarama), 6/2109-present.

Member, Morgridge College of Education's Flow-back Committee, 2014-present

Member, Morgridge College of Education's Internal Nomination Panel for the William T Grant Scholars award, 21/2015

Member, Implementation Oversight for Renew DU Research Projects committee, 2013-present

MCE Faculty Executive Committee, Sept. 1, 2013-August 31, 2016

Member, DU Associate Provost for Research Search Committee, June 2013-August 30 2013

Chair, Department of Learning and Instruction, 2011-2012

Director, Gifted Mathematics Program (GMP), 2011-2014

Member, GSE's Educational Technology Committee, 2006-2012

Member, LAI Web Redesign Committee, 2007-2012

Member, search committee, mathematics education, 2002-2003

Member, Doctoral Studies Committee, 2000-2005

Program Directors Committee, Program Director, Early Childhood

GSE Envisioning Committee, 2005-2011

Gifted Math Advisory Committee, 2006-2012

Member, Advisory Committee, EON

Member, GSE Technology Advisory Committee, 2004-2010

Service for Professional Organizations

- Consultant, Jim Henson Production, September 2020 – present.
- Member of expert panel and author, for IES's What Works Clearinghouse practice guide, *Preparing Young Children for School*.
- Content expert and expert panel member, Math Content Review Panel (CRP) for the Early Childhood Longitudinal Study, 2018-present

- Expert panel member, Longitudinal Studies Branch, National Center for Education Statistics, 2018-2019.
- Co-Chair, NSF's DR K-12 Topical Group on Early Learning, whose charge it was to synthesize existing and emerging knowledge and produce and prepare briefs and other products for research, practice, and policy audiences. November 30, 2017-present.
- Expert panel member, RME Partners in Research Project, 2018.
- Member, Early Childhood Development Committee, United Way.
- Editor, "Early Childhood Corner," *Teaching Children Mathematics*, 1999-2004.

Memberships

AERA	American Educational Research Association
ICCE	International Council for Computers in Education
NCTM	National Council of Teachers of Mathematics
PME	International Group for the Psychology of Mathematics Education