

Curriculum Vita
Ron Tzur, Ph.D.
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EDUCATION

1995	The University of Georgia Athens, Georgia	Doctor of Philosophy (Ph.D.) in Mathematics Education <u>Dissertation</u> : Interaction and Children's Fraction Learning
1992	Technion - Israel Institute of Technology Haifa, Israel	Master of Science (M.S.) in Mathematics Education <u>Thesis</u> : Influence of Cumulative Assessment Schema on the Teaching and Learning of Mathematics of Non College- Bound Students
1986	University of Haifa Haifa, Israel	Bachelor of Science (B.S.) in Mathematics and Geography Mathematics Teaching Certificate (7-12) with emphasis in social education

PROFESSIONAL EXPERIENCE

1. TEACHING

2009- present	University of Colorado Denver	Professor of Education (Mathematics Education) <ul style="list-style-type: none">• District Professor (new) role in the Professional Development School system of UCD, assumed in fall 2013 to provide support to mathematics education agenda in Aurora Public Schools• Developer of new master's degree in mathematics education (MSEd), including 3 new core courses (listed below) and a thesis option (I currently serve as advisor of six theses). These courses were then upgraded and cross-listed for doctoral students (I currently serve as chair of 8 PhD students and co-chair of 4 others)• Developer of new Math education Certificate in collaboration with Community Partners (MTED 5619, MTED 5620, MTED 5621, MTED 5622, MTED 5623)• Developer and Chair/Instructor of STEM/PL EdD Thematic Dissertation Group (DSEP 8994)• Instructor for the course: "Mathematics for Elementary Teachers" (MATH 3040)• Developer of and Instructor for the master's/doctoral course: "Mathematics Teaching – Theory and Practice" (MTED 5040/7040)• Developer of and Instructor for the master's/doctoral course: "Developmental Pathways in Children's Mathematical
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		Thinking” (MTED 5060/7060), including infusion of brain research materials to course
		<ul style="list-style-type: none"> • Developer of and Instructor for the master’s/doctoral course: “Learning Theories in Mathematics Education” (MTED 5030/7030) • Developer of and Instructor for the course: Elementary Mathematics Teaching 1” (UEDU 4002/5002) • Developer of and Instructor for the course: Elementary Mathematics Teaching 2” (UEDU 4003/5003)
2008	University of Adelaide	Professor of Education (Mathematics Education) <ul style="list-style-type: none"> • Instructor for the courses: “Senior/Junior Mathematics Curriculum and Methodology” (EDUC-4023/4033) • Instructor for the master’s course: “Introduction to Statistics in Educational Research” (EDUC-5026) • Instructor for the master’s course: “Qualitative Approaches to Educational Research” (EDUC-5019) • Co-Instructor for the master’s course: “Issues in Science and Mathematics Education” (EDUC-5508)
2006-2008	Purdue University	Professor of Education (Mathematics Education) <ul style="list-style-type: none"> • Instructor for the course: “Teaching Mathematics in the Elementary School” (EDCI-364) • Instructor for the doctoral seminar: “Developing as a Mathematics Education Researcher” (EDCI-620a)
2001-2005	North Carolina State University – Mathematics, Science, and Technology Education	Associate Professor of Education (Mathematics Education) <ul style="list-style-type: none"> • Developer of and instructor for the new doctoral course Research Literature in Mathematics Education (EMS-792y) • Developer of and instructor for the new doctoral course: Conceptual Frameworks in Mathematics Education Research (EMS-792Z) • Instructor for the undergraduate course: “Introduction to Teaching Mathematics” (EMS-203); taught the course 5 times while significantly revising it four times to incorporate the Japanese Lesson Study approach, a focus on the No Child Left Behind Act, and the use of multiple instructional representations • Co-Instructor for the doctoral seminar in mathematics and science education (EMS-802/803) • Instructor for the master’s course: "Special Problems in Mathematics (Geometry) Teaching” (EMS-592)
2000-	Shomria High School	School Principal

2002	Kibbutz Mishmar-Haemek, Israel	<ul style="list-style-type: none"> Shomria is a mid-size school in the north of Israel, comprised of students at the 7-12 grade level from 3 kibbutzim
1995-2001	Penn State University Curriculum & Instruction	<p>Assistant Professor of Education (Mathematics Education)</p> <ul style="list-style-type: none"> Developer of and instructor for the new doctoral course: "Analysis of Research Literature in Mathematics Education" (MTHED520) Instructor and supervisor for the 5 sections of the undergraduate course: "Teaching Mathematics in the Elementary Schools" (MTHED420, taught 3 times, revised 2) Developer of and instructor for the undergraduate course: "Teaching Mathematics in the Elementary Schools - the Year-Long Internship in the Professional Development Schools" (MTHED420, taught twice, revised once) Developer and instructor for the new graduate course: "Using Tools for Elementary Mathematics Learning" (MTHED497A, taught 3 times, revised twice) Instructor for the graduate seminar: "Issues in Elementary Mathematics Teacher Education" (MTHED497) Instructor for the group of graduate students taking an independent study on Piaget's constructivist theory of knowing (MTHED496) Developer and instructor for the master's course: "Research Literature in Mathematics Education" (MTHED497A) Developer and instructor for the new doctoral course: "Teaching and Learning Mathematics in the Elementary School" (MTHED597A). This course focused on understanding and comparing four learning theories (Behaviorist thought, Piaget, Dewey, and Vygotsky) Team-instructor and supervisor for the undergraduate course: "Teaching Secondary Mathematics II" (MTHED412)
1992-1995	University of Georgia Mathematics Education Department	<p>Instructor</p> <ul style="list-style-type: none"> Master's course: "Research Seminar in Mathematics Education" (EMT-699) Undergraduate course: "Mathematics Methods in Elementary Childhood Education" (EMT-442) Undergraduate course: "Mathematics Learning K-4" (EMT-441) Undergraduate course: "Mathematics for Elementary Teachers" (MAT-205) Technology (computer) Assistant for the undergraduate course: "Secondary School Mathematics Curriculum" (EMT-335)

1990-1992	Jezrael College (Haifa University Branch)	Instructor <ul style="list-style-type: none"> Trigonometry, geometry, and algebra to pre-college adult students
1990-1992	Amakim High School Kibbutz Mizra, Israel	Instructor (Grade 8-12) <ul style="list-style-type: none"> Calculus, statistics, trigonometry, geometry, and algebra
1979-1990	Shomria High School Kibbutz Mishmar-Haemek, Israel	Instructor (Grade 7-12) <ul style="list-style-type: none"> Chemistry, physics, geography, calculus, statistics, trigonometry, geometry, algebra, and remedial mathematics

2. RESEARCH

2009-present	University of Colorado Denver	Professor (School of Education and Human Development) <ul style="list-style-type: none"> PI for the NSF-funded project, <i>Student-Adaptive Pedagogy for Elementary Teachers: Promoting Multiplicative and Fractional Reasoning to Improve Students' Preparedness for Middle School Mathematics</i>. This new, 4-year, \$3,000,000 project (2015-2019) focuses on promoting and studying upper-elementary teachers' mathematics teaching and the impact of their shift toward pedagogical practices tailored to students' reasoning on student learning and outcomes. The project team consists of 6 additional co-PIs, 5 PhD students serving as graduate research assistants, 4 undergraduate research assistants. It is being conducted in full collaboration with the Aurora Public Schools and Sheridan Schools Districts, including 5 elementary schools (about 80 teachers, and 1100 students). PI for a collaborative research (self-funded) with Chinese Colleagues at Northeast Normal University, Changchun, China (led by Dr. Rui Ding). This project focuses on establishing new, technology-enabled (Zoom) research processes to observe and analyze teaching and learning of fractions in a Chinese classroom. The team includes 2 PhD students at UCD and 3 MA students in China. As part of this project, Dr. Tzur was fortunate to recruit Dr. Ding as a Visiting Scholar at UCD (self-funded), June-November of 2015. Collaborator on a research project with a colleague at the University of Texas, Austin. This project grew out of the Research Working Group (PME and PME-NA) we organized for addressing issues of mathematics education for students with learning disabilities in mathematics, particularly in the area of teaching/learning fractions conceptually. The collaboration led to several conference proceedings papers/presentations, two published refereed journal articles
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(one in press), and two more under review.

- PI for the CU Denver-funded project, *Where in the Brain is Fraction?* This 3-year, \$20,000 project (2010-2013) focused on how brains of young adults process comparisons among whole numbers and among fractions, while putting to the test a theoretical framework I have been developing to explain mathematical thinking and learning (reflection on activity-effect relationship)
- Consultant and collaborator of a research team at Utah State University on a project that focuses on developing *special educators'* ways of promoting and studying mathematics learning by students with learning disabilities (SLD) in math.
- Lead-member of research team working with teachers and the principal at Goldrick Elementary School (DPS) to improve mathematics teaching for all students (focus on ELL). This work showed substantial impact on student outcomes as measured annually via the Transitional Colorado Assessment Program (TCAP). We submitted a \$1.5M grant proposal to IES to expand and support this work (pending).
- PI on a \$1.5M grant proposal submitted (**pending**) to IES by a UCD-SEHD team to promote elementary teachers' learning and use of a student-adaptive mathematical pedagogy approach in teaching key concepts of multiplicative and fractional reasoning.
- PI on a \$3M grant proposal submitted (**pending - highly likely to be funded**) to NSF by a UCD-SEHD team to promote understanding of how upper-elementary teachers can learn and capitalize on research-based developmental sequences in students' construction of multiplicative and fractional schemes.
- PI on a \$500K grant proposal submitted to NSF by a UCD-UCB team to promote understanding of how the brain of fifth graders process fractional (and whole number) comparisons.
- Collaborator and member of research partnership between Denver Public Schools (ELA) and the University of Colorado Denver – School of Education and Human Development. This project focuses on identifying key variables in 8 schools that are successful with teaching English Language Learners (my work focused on an elementary school, Goldrick, where our studies extended to how teachers learn new practices and the impact of those practices on students' learning to reason multiplicatively)
- PI (sub-contract with Purdue University, \$140K/year) for the NSF-funded project, *Nurturing Multiplicative Reasoning of Students with Learning Disabilities in Computerized Conceptual-Modeling Environment*, a 5-year, \$3,000,000 study that focuses on how grade 4 & 5 students defined as at risk in

mathematics develop robust understandings of multiplicative concepts and operations and how an artificial intelligence computer software may emulate conceptually-based teaching methods for promoting those students' learning in schools.

(Note: I wrote this proposal and am playing a leading role in conducting the project, but assumed the role of a co-PI due to the brief move to Australia at the time the project started.)

- PI on a new, cross-cultural study of Eastern (Chinese) and Western (USA) mathematics teachers' pedagogical perspectives and practices. Data collection in China took place in May of 2009, including sets of interviews and observations with 11 teachers in two schools (one in each major, multi-million resident city). Data collection in the US (Denver) began in April-May of 2010, leading to the preparation and submission of a larger research proposal for external funding.

Research Professor (Affiliate) at the University of Maryland Institute for Advanced Computer Sciences (UMIACS)

- Continual work with PI Uzi Vishkin (past funding termination) on the NSF-funded pilot project Teachers' Learning to Teach Parallel Algorithmic Thinking (PAT), a 1-year, \$50,000 study that follows two case study teachers as they plan and implement PAT lessons for their high school students (VA, MD). This work included preparation and delivery of a collaborative **keynote** presentation at the CS4HS Summer Workshop organized by and at Carnegie Mellon University. We co-wrote and submitted four grant proposals to NSF (all declined) to extend this work and move teaching of parallelism in computers to the high school level.

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2009 Purdue University

Research Professor (Educational Studies)

- Co-PI for the NSF-funded project, Nurturing Multiplicative Reasoning of Students with Learning Disabilities in Computerized Conceptual-Modeling Environment, a 6-year (2008-2014), \$3,000,000 study that focuses on how grade 4 & 5 students defined as at risk in mathematics develop robust understandings of multiplicative concepts and operations and how an artificial intelligence computer software may emulate conceptually-based teaching methods for promoting those students' learning in schools.

Research Professor (Affiliate) at the University of Maryland Institute for Advanced Computer Sciences (UMIACS)

- Co-PI for the NSF-funded pilot project, Teachers' Learning to Teach Parallel Algorithmic Thinking (PAT), a 1-year, \$50,000 study that follows two case study teachers as they plan and implement PAT lessons for their high school students (VA,

MD).

2008 University of Adelaide

Professor of Education (Mathematics Education); Adjunct Faculty (Professor) – Purdue University

- Co-PI for the NSF-funded project, Nurturing Multiplicative Reasoning of Students with Learning Disabilities in Computerized Conceptual-Modeling Environment, a 5-year, \$3,000,000 study that focuses on how grade 4 & 5 students defined as at risk in mathematics develop robust understandings of multiplicative concepts and operations and how an artificial intelligence computer software may emulate conceptually-based teaching methods for promoting those students' learning in schools. (Note: I wrote this proposal, but assumed the role of a co-PI due to the brief move to Australia.)
- Collaborator and prospective co-PI in the development of a proposal (with PI Simon) to promote and study middle school teachers' development of mathematical and pedagogical reasoning, submitted to the Australian Research Council a few weeks after I left Adelaide.
- Collaborator and prospective PI in the development of a proposal to promote and study elementary mathematics teachers' pedagogical approaches for teaching Aboriginal children in urban centers in Australia. The project was approved and \$50,000 award was granted to the Australian Association of Mathematics Teachers in collaboration with the University of Adelaide a month after I left.

Research Professor (Affiliate) at the University of Maryland Institute for Advanced Computer Sciences (UMIACS)

- Co-PI for an NSF-funded pilot project examining high school CS teachers' transition from serial to parallel programming and algorithmic thinking, \$50,000.

2006-2008 Purdue University

Professor of Education (Mathematics Education)

- Program Director at the National Science Foundation (NSF)
- Mentor for junior faculty, Dr. Lecretia Buckley, in developing her proposal for C&I Summer Proposal Writing (January, 2006)

2001-2005 North Carolina State University – Mathematics, Science, and Technology Education

Associate Professor of Education (Mathematics Education)

- PI for the NSF-funded project Nurturing Mathematics Dreamkeepers, a 5-year, \$3,655,000 study that focuses on how K-2 teachers develop a conception-based, culturally relevant pedagogy to better serve the learning of African American students and thus contribute to understanding, and closing, the achievement gap. In the summer of 2005 I was responsible for writing and successfully securing a Supplemental Budget grant of \$351,000 (hence a total of \$4.0 million).

- Developer of proposal for and evaluator of the U.S. Department of Education (Jacob Javitz) funded Bright IDEA-2 project. This is a 5-year (2004-2009), \$2,500,000, R&D teacher enhancement project for promoting K-2 gifted and talented minority students. The project is conducted jointly by the American Association for Gifted Children at Duke University and the NC Department of Public Instruction.
- Research consultant to the Bright IDEA-1, teacher enhancement project for promoting K-2 gifted and talented minority students, conducted jointly by the American Association for Gifted Children at Duke University and the NC Department of Public Instruction.
- Leading researcher in a group of mathematics and science educators (including doctoral students), studying the relationship between conceptual understanding of mathematics and science.
- PI (fellow) for National Academy of Education / Spencer Foundation-funded project, Relating Conceptual Learning and Teaching in Mathematics, (\$45,000) including development of the proposal and carrying out the study in a third grade classroom in Israel.

1995-2001 Penn State University
Curriculum & Instruction

Assistant Professor of Education (Mathematics Education)

- PI (fellow) for National Academy of Education / Spencer Foundation-funded project, Relating Conceptual Learning and Teaching in Mathematics, (\$45,000) including development of the proposal and carrying out the study in a third grade classroom in Israel.
- Co-PI for National Science Foundation-funded project, Mathematics Teacher Development, (over \$1,000,000 for 4.5 years) including development of the proposal, recruitment of elementary and middle grade teachers, on-going analysis of class progress and case studies, and writing papers for refereed journals and refereed conference proceedings.
- Co-PI and Leader in a research and teaching team of the new Penn State – State College Area School District Professional Development Schools (PDS) Partnership, (over \$450,000 for 3 years from Lucent Technology) including conceptualization of the partnership, creation of the mathematics education component of the program, recruitment of preservice and inservice elementary teachers, and writing the grant proposal.
- Studying elementary teachers' understanding about division of fractions in collaboration with Ms. Maria A. Timmerman (doctoral student).

1992- University of Georgia

Research Assistant

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| 1995 | Mathematics Education Department | <ul style="list-style-type: none"> Assisted activities of the National Science Foundation-funded project, Children's Construction of the Rational Numbers of Arithmetic, directed by Dr. Leslie P. Steffe, including development and analysis of teaching episodes and conducting a teaching experiment with two children. Assisted activities of the Eisenhower Plan-funded project, Improving Teachers' Evaluation Practices: Development of Materials, directed by Dr. Thomas J. Cooney, including assisting secondary and middle school teachers in developing and implementing alternative assessment practices. Assisted activities of the Eisenhower Plan-funded project, Support for the Continuous Achievement Assessment Program (Mathematics Component), Fulton County schools, GA, directed by Dr. Cooney, including studying implementation of countywide K-5 alternative assessment program. |
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PUBLICATIONS

1. REFEREED JOURNALS

Woodward, J., & Tzur, R. (in press). Introduction to the Special Series. *Learning Disability Quarterly*.

Woodward, J., & Tzur, R. (in press). Final Commentary to the Special Series. *Learning Disability Quarterly*.

Xin, Y. P., Tzur, R., Hord, C., Liu, J., Park, J. Y., & Si, L. (in press). An intelligent tutor-assisted mathematics intervention program for students with learning difficulties. *Learning Disability Quarterly*.

Hord, C., Tzur, R., Xin, Y. P., Si, L., Kenney, R. H., & Woodward, J. (2016). Overcoming a 4th grader's challenges with working-memory via constructivist-based pedagogy and strategic scaffolds: Tia's solutions to challenging multiplicative tasks. *Journal of Mathematical Behavior*, 44, 13-33.

Xin, Y. P., & Tzur, R. (2016). Cross-disciplinary thematic special series: Special education and mathematics education. *Learning Disability Quarterly*, 39(4), 196-198.
doi:10.1177/0731948716669816

Hunt, J. H., Tzur, R., & Westenskow, A. (2016). Evolution of Unit Fraction Conceptions in Two Fifth-Graders with a Learning Disability: An Exploratory Study. *Mathematical Thinking and Learning*, 18(3), 182-208. doi:10.1080/10986065.2016.1183089

Xin, Y. P., Liu, J., Jones, S., Tzur, R., & Si, L. (2016). A preliminary discourse analysis of constructivist-oriented math instruction for a student with learning disabilities. *Journal of Educational Research*, 109, 1-12.

Tzur, R., & Hunt, J. H. (2015). Iteration: unit fraction knowledge and the French fry task. *Teaching Children Mathematics*, 22(3), 148-157.

Tzur, R. (2014). Reorganization of anticipation: A hard core principle in Steffe's research program on children's progression from numerical to algebraic reasoning. In L. P. Steffe, K. C. Moore & L. L. Hatfield (Eds.), *Epistemic algebraic students: Emerging models of students' algebraic knowing* (Vol. 4, pp. 175-197). University of Wyoming: Wyoming Institute for the Study and Development of Mathematical Education (WISDOMe).

Tzur, R. (2014). Second-order models: A theoretical bridge to practice, a practical bridge to theory. *Constructivist Foundations*, 9(3), 350-352.

Tzur, R., Johnson, H. L., McClintock, E., Kenney, R. H., Xin, Y. P., Si, L., Woodward, J., Hord, C., Jin, X. (2013). Distinguishing schemes and tasks in children's development of multiplicative reasoning. *PNA*, 7(3), 85-101.

Tzur, R., & Lambert, M. A. (2011). Intermediate participatory stages as Zone of Proximal Development correlate in constructing counting-on: A plausible conceptual source for children's transitory 'regress' to counting-all. *Journal for Research in Mathematics Education*, 42(5), 418-450.

Tzur, R. (2011). Can dual processing theories of thinking inform conceptual learning in mathematics? *The Mathematics Enthusiast*, 8(3), 597-636.

Cetintas, S., Si, L., Xin, Y. P., Zhang, D., Park, J. Y., & **Tzur, R. (2010).** A joint probabilistic classification model of relevant and irrelevant sentences in mathematical word problems. *Journal of Educational Data Mining*, 2(1), 83-101.

Torbert, S., Vishkin, U., **Tzur, R.**, and Ellison, D. J. (2010). Is teaching parallel algorithmic thinking to high school students possible? One teacher's experience. *SIGCSE'10*. Milwaukee, WI: ACM 978-1-60558-885-8/10/03.

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Tzur, R. (2007). Fine grain assessment of students' mathematical understanding: Participatory and anticipatory stages in learning a new mathematical conception. *Educational Studies in Mathematics*, 66, 3, 273-291.

Tzur, R., & Clarke, M. R. (2006). Riding the mathematical Merry-Go-Round to foster conceptual understanding of angle. *Teaching Children Mathematics*, 12, 8, 388-393.

Tzur, R., & Simon, M. A. (2004). Distinguishing two stages of mathematics conceptual learning. *International Journal of Science and Mathematics Education*, 2, 287-304.

Simon, M. A., & **Tzur, R.** (2004). Explicating the role of mathematical tasks in conceptual learning: An elaboration of the hypothetical learning trajectory. *Mathematical Thinking and Learning*, 6, 2, 91-104.

Simon, M. A., **Tzur, R.**, Heinz, K., & Kinzel, M. (2004). Explicating a mechanism for conceptual learning: Elaborating the construct of reflective abstraction. *Journal for Research in Mathematics Education*, 35, 5, 305-329.

Tzur, R. (2004). Teacher and students' joint production of a reversible fraction conception. *Journal of Mathematical Behavior*, 23, 1, 93-114.

Dana, N.F., Silva, D.Y., Gimbert, B., Nolan, J. (Jr.), Zembal-Soul, C., **Tzur, R.**, Mule, L., Sanders, L. (2001). Developing new understandings of PDS work: Better problems, better questions. *Action in Teacher Education*, 22, 4, 15-27.

Tzur, R. (2001). Becoming a mathematics teacher educator: Conceptualizing the terrain through self-reflective analysis. *Journal of Mathematics Teacher Education*, 4, 4, 259-283.

Tzur, R., Simon, M.A., Heinz, K., Kinzel, M. (2001). An Account of a Teacher's Perspective on Learning and Teaching Mathematics: Implications for Teacher Development. *Journal of Mathematics Teacher Education*, 4(3), 227-254.

Heinz, K., Kinzel, M., Simon, M.A., & **Tzur, R.** (2000). Moving students through steps of mathematical knowing: An account of the practice of an elementary mathematics teacher in transition. *Journal of Mathematical Behavior*, 19, 83-107.

Simon, M. A., **Tzur, R.**, Heinz, K., Kinzel, M., & Smith, M. S. (2000). Characterizing a perspective underlying the practice of mathematics teachers in transition. *Journal for Research in Mathematics Education*, 31, 5, 579-601.

Tzur, R. (2000). An integrated research on children's construction of meaningful, symbolic, partitioning-related conceptions, and the teacher's role in fostering that learning. *Journal of Mathematical Behavior*, 18, 2, 123-147.

Simon, M. A., and **Tzur, R.** (1999). Explicating the teacher's perspective from the researchers' perspectives: Generating accounts of mathematics teachers' practice. *Journal for Research in Mathematics Education*, 30, 3, 252-264.

Tzur, R. (1999). An integrated study of children's construction of improper fractions and the teacher's role in promoting that learning. *Journal for Research in Mathematics Education*, 30, 4, 390-416.

Tzur, R., and Movshovitz-Hadar, N. (1998). Curricular change agenda for failure-experienced mathematics students: Can success-promoting assessment make a difference? *Studies in Educational Evaluation*, 24, 3, 229-247.

Steffe, L. P., and **Tzur, R.** (1994). Interaction and children's mathematics. *Journal of Research in Childhood and Education*, 8, 2, 99-116.

2. BOOK CHAPTERS AND ARTICLES IN REFEREED PROCEEDINGS

Tzur, R. (peer reviewed, accepted for publication). Brain-mind theory-driven task design. To appear in E. Kelly, S. Jensen, and J. Baek, (Eds.), *NeuroMathEducation*. Cambridge, MA: Cambridge University Press.

Tzur, R., Johnson, H., Norton, A., Davis, A., Wang, X., Ferrara, M., Jorgensen, C., & Hodkowski, N. (under review; study from NSF-funded project submitted for publication in the PME annual, peer-refereed, conference proceedings). Conception of number as a composite unit predicts students' multiplicative reasoning: Quantitative corroboration of Steffe's model.

Hodkowski, N. M., Hornbein, P., Gardner, A., Johnson, H. L., Jorgensen, C., & Tzur, R. (2016). Designing a stage-sensitive written assessment of elementary students' scheme for multiplicative reasoning. In M. B. Wood, E. Turner, M. Civil, & J. A. Eli (Eds.), *Proceedings of the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (Vol. 1581-1587). Tucson, AZ: The University of Arizona.

Risley, R., Hodkowski, N. M., & Tzur, R. (2016). Devin's construction of a multiplicative double counting scheme: Focus on dual anticipation of start and stop. In M. B. Wood, E. Turner, M. Civil, & J. A. Eli (Eds.), *Proceedings of the 38th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 164-170). Tucson, AZ: The University of Arizona.

Tzur, R. (2016). On natural numbers and fractions: A reorganization (no bias) stance. In C. Csikos, A. Rausch, & J. Szitányi (Eds.), *Proceedings of the 40th Conference of the International Group for the Psychology of Mathematics Education* (Vol. 1, pp. 399-403). Szeged, Hungary: University of Szeged.

Tzur, R., Hodkowski, N., and Uribe, M. (2016). A Fourth Grade Teacher's Mathematics: The Case of Annie's Understanding of Decimals. *Proceedings of the Annual Meeting of the Hawaii International Conference on Education*. Honolulu, HI: Author.

Tzur, R., Hunt, J. H., & Westenskow, A. (2015). Nature and utility of teacher questioning: A case of constructivist-oriented intervention. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield, & H. Dominguez (Eds.), *Proceedings of the Annual Meeting of Psychology of Mathematics Education – North American Chapter* (pp. 1158-1161). East Lansing, MI: Michigan State University.

Risley, R., Hodkowski, N., & Tzur, R. (2015). Jake's conceptual operations in multiplicative tasks: focus on number choice. In T. G. Bartell, K. N. Bieda, R. T. Putnam, K. Bradfield, & H. Dominguez (Eds.), *Proceedings of the Annual Meeting of Psychology of Mathematics Education – North American Chapter* (pp. 181-188). East Lansing, MI: Michigan State University.

Tzur, R. (2015). fMRI study of fraction processing in adult brains. In K. Beswick, T. Muir, & J. Wells (Eds.), *Proceedings of 39th Psychology of Mathematics Education conference* (Vol. 1, pp. 110-115). Hobart, Australia: PME.

Tzur, R., & Leikin, R. (2015). Introduction to Research Forum: Interweaving mathematics education and cognitive neuroscience. In K. Beswick, T. Muir, & J. Wells (Eds.), *Proceedings of 39th Psychology of Mathematics Education conference* (Vol. 1, pp. 91-93). Hobart, Australia: PME.

Leikin, R., & **Tzur, R.** (2015). Discussion and concluding remarks to Research Forum: Interweaving mathematics education and cognitive neuroscience. In K. Beswick, T. Muir, & J. Wells (Eds.), *Proceedings of 39th Psychology of Mathematics Education conference* (Vol. 1, pp. 115-116). Hobart, Australia: PME.

Huang, R., Miller, D. L., and **Tzur, R.** (2015). Mathematics teaching in a Chinese Classroom: A hybrid-model analysis of opportunities for students' learning. In Fan, L., Wong, N-Y., Cai, J., and Li, S. (Eds.), *How Chinese teach mathematics: Perspectives from insiders* (pp. 73-110). Singapore: World Scientific.

Tzur, R., & Depue, B. E. (2014). Conceptual and brain processing of unit fraction comparisons: A CogNeuro-MathEd study. In S. Oesterle, C. Nicol, P. Liljedahl & D. Allan (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36* (Vol. 5, pp. 297-304). Vancouver, Canada: PME.

Hodkowski, N., **Tzur, R.**, Johnson, H. L., & McClintock, E. (2014). Relating student outcomes to teacher development of student-adaptive pedagogy. In S. Oesterle, C. Nicol, P. Liljedahl & D. Allan (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36* (Vol. 3, pp. 321-328). Vancouver, Canada: PME.

Hunt, J. H., **Tzur, R.**, & Westenskow, A. (2014). Intermediate participatory stages of the concept of unit fraction: Two students with learning disability. In S. Oesterle, C. Nicol, P. Liljedahl & D. Allan (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36* (Vol. 6, pp. 106). Vancouver, Canada: PME.

Ma, X., Xin, Y. P., **Tzur, R.**, Si, L., Yang, X., Park, J. Y., . . . Ding, R. (2014). The effect of an intelligent tutor on math problem-solving of students with learning disabilities. In S. Oesterle, C. Nicol, P. Liljedahl & D. Allan (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36* (Vol. 4, pp. 145-152). Vancouver, Canada: PME.

Park, J. Y., Xin, Y. P., **Tzur, R.**, Si, L., & Hord, C. (2014). A comparison of instructional sequence in intelligent tutor-assisted math problem-solving intervention program. In S. Oesterle, C. Nicol, P. Liljedahl & D. Allan (Eds.), *Proceedings of the Joint Meeting of PME 38 and PME-NA 36* (Vol. 6, pp. 380). Vancouver, Canada: PME.

Park, J. Y., Xin, Y. P., Liu, J., Hord, C., **Tzur, R.**, & Si, Lu. (2013, April). *Exploring the effects of intelligent tutoring system on multiplicative reasoning and problem-solving of students with learning disabilities*. Paper presented at the Annual meeting of the American Educational Research Association (AERA), San Francisco, CA.

Xin, Y. P., Hord, C., Liu, J., Park, J. Y., **Tzur, R.**, & Si, L. (2013, April). *A comparison of teacher-delivered instruction and an intelligent tutor-assisted math problem-solving intervention program*. Paper presented at the Annual meeting of the American Educational Research Association (AERA), San Francisco, CA.

Tzur, R. (2013). Too often, these children are teaching-disabled, not learning-disabled. *Proceedings of the 11th Annual Hawaii International Conference on Education*. Honolulu, HI: Author (DVD).

Tzur, R., Johnson, H. L., McClintock, E., & Risley, R. (2012). Culturally-Mathematically Relevant Pedagogy (CMRP): Fostering Urban English Language Learners' Multiplicative Reasoning. *Proceedings of the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (pp. 829-836). Kalamazoo, MI.

Tzur, R., Johnson, H. L., McClintock, E., Xin, Y. P., Si, L., Kenney, R. H., Woodward, J., Hord, C., & Jin, X.. (2012). Children's development of multiplicative reasoning: A schemes and tasks framework. In T.-Y. Tso (Ed.), *Proceedings of the 36th conference of the International Group for the Psychology of Mathematics Education* (Vol. 4, pp. 155-162). Taipei, Taiwan: National Taiwan Normal University.

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Jin, X. and **Tzur, R.** (2010). Non-traditional use of ‘math-as-human-endeavour’: Two Chinese middle school teachers’ attempts to inspire students’ curiosity. *Proceedings of the 8th Annual Hawaii International Conference on Education*, pp. 3581-3588. Honolulu, HI: Author.

Tzur, R. (2010). How and what might teachers learn through teaching mathematics: Contributions to closing an unspoken gap. In R. Leikin and R. Zazkis (Eds.), *Learning Through Teaching Mathematics: Development of Teachers’ Knowledge and Expertise in Practice*, pp. 49-67. New York: Springer.

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31st Annual Conference of the North American Chapter of the Psychology of Mathematics Education, vol. 5, pp. 1378-1385. Atlanta, GA: Georgia State University.

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Tzur, R., Xin, Y. P., Si, L., Woodward, J., & Jin, X. (2009). Promoting transition from participatory to anticipatory stage: Chad's case of multiplicative mixed-unit coordination (MMUC). In M. Tzekaki, M. Kaldrimidou & H. Sakonidis (Eds.), *Proceedings of the 33rd Conference of the International Group for the Psychology of Mathematics Education* (Vol. 5, pp. 249-256). Thessaloniki, Greece: PME.

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Tzur, R. (2007). What and how might teachers learn via teaching: Contributions to closing an Unspoken Gap. In J.H. Woo, H.C. Lew, K.S. Park, and D.Y. Seo (Eds.), *Proceedings of the 31st Annual Meeting of the International Group for the Psychology of Mathematics Education* (Vol. 1, pp. 142-150). Seoul, South Korea: The Korean Society of Educational Studies in Mathematics.

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Heinz, K., Simon, M.A., Kinzel, M., and **Tzur, R.** (1999). A perspective on the use of manipulatives: Making sense of a teacher's use of base-ten blocks to promote understanding of the long-division algorithm. In F. Hitt & M. Santos (Eds.), *Proceedings of the twenty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (vol. 2, pp. 737-743). Cuernavaca, Mexico.

Simon, M.A., & **Tzur, R.,** Heinz, K., Kinzel, M., and Smith, M.S. (1999). On formulating the teacher's role in promoting mathematics learning. In O. Zaslavsky (Ed.), *Proceedings of the twenty-third annual meeting of the International Group for the Psychology of Mathematics Education*, (vol. 4, pp. 201-208). Haifa, Israel.

Tzur, R. (1999). Becoming a mathematics teacher-educator: Conceptualizing the terrain through self-reflective analysis. In O. Zaslavsky (Ed.), *Proceedings of the twenty-third annual meeting of the International Group for the Psychology of Mathematics Education*, (vol. 1, pp. 169-184). Haifa, Israel.

Tzur, R., and Simon, M.A. (1999). Postulating relationships between levels of knowing and types of tasks in mathematics teaching: A constructivist perspective. In F. Hitt & M. Santos (Eds.), *Proceedings of the twenty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (vol. 2, pp. 805-810). Cuernavaca, Mexico.

Simon, M.A., **Tzur, R.**, Heinz, K., Kinzel, M., and Smith, M.S. (1998). Characterizing a perspective on mathematics learning of teachers in transition. In S. Berenson, K. Dawkins, M. Blanton, W. Coulombe, J. Kolb, K. Norwood, & L. Stiff (Eds.), *Proceedings of the twentieth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (vol. 2, pp. 768-773). Raleigh, NC: North Carolina State University.

Tzur, R., Simon, M.A., Heinz, K., and Kinzel, M. (1998). Meaningfully assembling mathematical pieces: An account of a teacher in transition. In A. Olivier & K. Newstead (Eds.), *Proceedings of the twenty-second annual meeting of the International Group for the Psychology of Mathematics Education*, (vol. 4, pp. 145-152). Stellenbosch, South Africa.

Heinz, K., Kinzel, M., Simon, M.A., and **Tzur, R.** (1997). One teacher's solution to reforming mathematics teaching. In Dossey, J.A., Swaford, J.O., Parmantie, M., & Dossey, A.E. (Eds.), *Proceedings of the nineteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (vol. 2, pp. 365-370). Normal, IL: Illinois State University.

Simon, M.A., and **Tzur, R.** (1997). Generating theoretical accounts of mathematics teachers' practice. In Pehkonen, E. (Ed.), *Proceedings of the twenty-first annual meeting of the International Group for the Psychology of Mathematics Education*, (vol. 4, pp. 160-165). Lahti, Finland: Lahti Research and Training Centre.

Simon, M. A., **Tzur, R.**, Ball D. L., and Stimpson, V. (1997). Teachers' construction of new models of teaching. A thematic presentation prepared for the *Research Presession of the seventy-fifth annual meeting of the National Council of Teachers of Mathematics*. Minneapolis, MN.

Tzur, R., and Timmerman, M. (1997). Why do we invert and multiply: Elementary teachers' struggle to conceptualize division of fractions. In Dossey, J.A., Swaford, J.O., Parmantie, M., & Dossey, A.E. (Eds.), *Proceedings of the nineteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (vol. 2, pp. 553-559). Normal, IL: Illinois State University.

Tzur, R. (1996). Relationship of affective and cognitive aspects of learning. In E. Jakubowski, D. Watkins, & H. Biske (Eds.), *Proceedings of the eighteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (vol. 1, p. 131). Panama City, FL: Florida State University.

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Tzur, R. (1995, April). Teaching-learning interaction and children construction of the Equi-Partitioning Scheme. *A paper presented at the annual meeting of the American Educational Research Association*, San Francisco, CA.

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Tzur, R., Brooks, K., Enderson, M., Morgan, M., and Cooney, T. J. (1993). Teachers' use of alternate assessment methods. In J. R. Becker & B. J. Pence (Eds.), *Proceedings of the fifteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education*, (vol. 1, pp. 151-157). San Jose, CA: San Jose State University, Center for Mathematics and Computer Science Education.

3. MANUSCRIPTS IN PROGRESS

Tzur, R., Johnson, H., Norton, A., Davis, A., Wang, X., Ferrara, M., Jorgensen, C., & Hodkowski, N. (Manuscript in progress). Conception of number as a composite unit predicts students' multiplicative reasoning: Quantitative corroboration of Steffe's model.

Tzur, R. & Depue, B. E. (Manuscript in progress). Brain circuitry recruited when solving comparison tasks with whole numbers and unit fractions.

Tzur, R. & Depue, B. E. (Manuscript in progress). Brain processing of whole number vs. fraction comparisons: Impact of constructivist-based task design on reaction time and distance effect.

Tzur, R., et al., (Manuscript in progress). Promoting transition from participatory to anticipatory stage: Chad's case of multiplicative mixed-unit coordination (mMUC).

4. OTHER PUBLICATIONS

Tzur, R. (2013). From counting-all to counting-on: Children's transition to a concept of number. A paper written for the ACT organization.

Jin, X., & **Tzur, R.** (2011, January). *Progressive incorporation of new into known: A perspective on and practice of mathematics learning and teaching in China*. Paper presented at the Annual Conference of the Association of Mathematics Teacher Educators. Irvine, CA.

Jin, X., & **Tzur, R.** (2011, April). *'Bridging': An assimilation- and ZPD-enhancing practice in Chinese pedagogy*. Paper presented at the the 91st Annual Meeting of the National Council of Teachers of Mathematics (Research Pre-Session). Indianapolis, IN.

Tzur, R., Xin, Y. P., Si, L., Kenney, R., & Guebert, A. (2010, April). *Students with learning disability in math are left behind in multiplicative reasoning? Number as abstract composite unit is a likely “culprit”*. Paper presented at the American Educational Research Association. Denver, CO. Retrieved from <http://www.eric.ed.gov/>

Tzur, R. (1998). Technology-enriched elementary mathematics education. A paper published on the World Wide Web (<http://www.ncrel.org/sdrs/highered/tzurintr.htm>) that documents implementation of computer technology into elementary mathematics methods courses for preservice teachers at Penn State University.

Tzur, R. (1996). *Interaction and children's fraction learning*. Ann Arbor, MI: UMI Dissertation Services (Bell & Howell).

Tzur, R. (1995). *Kesher-Cham - The Israeli Pedagogical Center for the Improvement of Mathematics Education: Evaluation Report of the Inservice Program for Secondary Mathematics Teachers and Department Heads* (Hebrew). Athens, GA: The University of Georgia.

Tzur, R. (1994). *Inservice training program for mathematics teachers: Evaluation report of the NSF-Funded Louisiana Systemic Initiative Program (LaSIP)*. Athens, GA: The University of Georgia.

Tzur, R. (1992). *Assessment of mathematics learning of non college-bound students: The challenge and an attempt to meet it*. Unpublished master's thesis (Hebrew). Technion, Haifa, Israel.

PRESENTATIONS AND WORKSHOPS

1. INTERNATIONAL

Tzur, R. (2016). **On natural numbers and fractions: A reorganization (no bias) stance.** A paper presented as part of the Research Forum on fractions and whole numbers at the *40th Conference of the International Group for the Psychology of Mathematics Education*. Szeged, Hungary.

Tzur, R., Hodkowski, N., and Uribe, M. (2016, January). **A Fourth Grade Teacher's Mathematics: The Case of Annie's Understanding of Decimals.** A paper be presented at the *Annual Meeting of the Hawaii International Conference on Education*. Honolulu, HI.

Tzur, R., Hunt, J. H., & Westenskow, A. (2015, November). Nature and Utility of Teacher Questioning: A Case of Constructivist-Oriented Intervention. A paper presented at the *Annual Meeting of Psychology of Mathematics Education – North American Chapter*. East Lansing, MI.

Risley, R., Hodkowski, N., and **Tzur, R.** (2015, November). Jake's conceptual operations in multiplicative tasks: focus on number choice. A paper presented at the *Annual Meeting of Psychology of Mathematics Education – North American Chapter*. East Lansing, MI.

Tzur, R. (2015, July). fMRI study of fraction processing in adult brains. A Research Forum organized and presented at the *39th Psychology of Mathematics Education conference*. Hobart, Australia: PME.

Tzur, R. & Leikin, R. (2015, July). Introduction to Research Forum: Interweaving mathematics education and cognitive neuroscience. A Research Forum organized and presented at the *39th Psychology of Mathematics Education conference*. Hobart, Australia: PME.

Leikin, R. & **Tzur, R.** (2015, July). Discussion and concluding to Research Forum: Interweaving mathematics education and cognitive neuroscience. A Research Forum organized and presented at the *39th Psychology of Mathematics Education conference*. Hobart, Australia: PME.

Tzur, R. (2015, May). Linking a Two-Stage Constructivist Framework of Learning Abilities with Brain Activation: Illustrations from an fMRI Study (Fractions). An invited, **plenary** presentation at the Cognitive and Neurocognitive Aspects of Learning Abilities and Disabilities Conference. Haifa, Israel: Haifa University.

Tzur, R., & Depue, B. E. (2014, July). Conceptual and brain processing of unit fraction comparisons: A CogNeuro-MathEd study. A peer-refereed paper presented at *the Joint Meeting of PME 38 and PME-NA 36*. Vancouver, Canada: PME.

Hodkowski, N., **Tzur, R.,** Johnson, H. L., & McClintock, E. (2014, July). Relating student outcomes to teacher development of student-adaptive pedagogy. A peer-refereed paper presented at *the Joint Meeting of PME 38 and PME-NA 36*. Vancouver, Canada: PME.

Hunt, J. H., **Tzur, R.,** & Westenskow, A. (2014, July). Intermediate participatory stages of the concept of unit fraction: Two students with learning disability. A peer-refereed paper presented at *the Joint Meeting of PME 38 and PME-NA 36*. Vancouver, Canada: PME.

Ma, X., Xin, Y. P., **Tzur, R.,** Si, L., Yang, X., Park, J. Y., . . . Ding, R. (2014, July). The effect of an intelligent tutor on math problem-solving of students with learning disabilities. A peer-refereed paper presented at *the Joint Meeting of PME 38 and PME-NA 36*. Vancouver, Canada: PME.

Park, J. Y., Xin, Y. P., **Tzur, R.,** Si, L., & Hord, C. (2014, July). A comparison of instructional sequence in intelligent tutor-assisted math problem-solving intervention program. A peer-refereed paper presented at *the Joint Meeting of PME 38 and PME-NA 36*. Vancouver, Canada: PME.

Tzur, R. (2014, June). A Neuro-Constructivist, Brain-Mind Model: Linking A Theory of Learning with Brain Research. Seminar presented to faculty, graduate students, and mathematics teachers at East China Normal University. Shanghai, China.

Tzur, R. (2014, May). Account of Practice: A Methodology for Studying Mathematics Teacher Perspectives. Seminar presented to faculty, graduate students, and mathematics teachers at Northeastern Normal University. Changchun, China.

Tzur, R. (2014, May). A Four-Perspective Framework: Why Do Mathematics Teachers Teach the Way They Do? Seminar presented to faculty, graduate students, and mathematics teachers at Northeastern Normal University. Changchun, China.

Tzur, R. (2014, May). Reflection on Activity-Effect Relationship: A Constructivist Perspective on Mathematics Learning as Transformation (change) in One's Existing Knowledge. Seminar presented to faculty, graduate students, and mathematics teachers at Northeastern Normal University. Changchun, China.

Tzur, R. (2014, May). Reflection on Activity-Effect Relationship: A Constructivist Perspective on Mathematics Learning as Transformation (change) in One's Existing Knowledge. A seminar presented to faculty, graduate students, and mathematics teachers at Nanjing Normal University. Nanjing, China.

Tzur, R. & Depue, B. (2014, May). *Novel findings in brain research via constructivist-based task design: Reversed distance effect for whole numbers, fMRI differentiation of fraction circuitry*. An invited, talk to be presented at the BIT's 5th Annual World Congress of Neurotalk. Nanjing, China.

Tzur, R. (2013, January). *Too often, these children are teaching-disabled, not learning-disabled*. Paper presented at the 11th Annual Hawaii International Conference on Education. Honolulu, HI: Author (DVD).

Tzur, R. (2012, July). Discussant of the presentation by Dr. Olive Chapman at the Annual Taiwan Conference on Mathematics Education. Taipei, Taiwan.

Tzur, R., Johnson, H. L., McClintock, E., Xin, Y. P., Si, L., Kenney, R. H. (2012, July). *Children's development of multiplicative reasoning: A schemes and tasks framework*. Paper presented at the 36th conference of the International Group for the Psychology of Mathematics Education. Taipei, Taiwan.

Tzur, R., Cordes, D., & Jin, X. (2012, June). *Elaborating a brain-mind model of reflective abstraction: Task design for whole number and fraction schemes*. Paper presented at the 42nd Annual Meeting of the Jean Piaget Society: Rethinking Cognitive Development.

Tzur, R. (2011, September). *Want teaching to matter? Theorize it with learning ... A keynote address* to the Fourth Conference on Research in Mathematics Education MEI 4 (pp. 50-70). Dublin, Ireland.

Tzur, R. (2011, July). Comparing A Brain-Based Account of Thinking and Learning with Dual-Processing Theories. The CogSci Annual Conference. Boston, MA.

Jin, X. and **Tzur, R.** (2010, January). Non-traditional use of 'math-as-human-endavour': Two Chinese middle school teachers' attempts to inspire students' curiosity. The 8th Annual Hawaii International Conference on Education. Honolulu, HI.

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Tzur, R. & Lambert, M. A. (2009, July). Participatory stages toward counting-on: A conceptual cause for 'Regress' to counting-all. The 33rd Conference of the International Group for the Psychology of Mathematics Education (PME), Thessaloniki, Greece.

Tzur, R., Xin, Y. P., Si, L., Woodward, J., & Jin, X. (2009, July). Promoting transition from participatory to anticipatory stage: Chad's case of multiplicative mixed-unit coordination (MMUC). The International Group for the Psychology of Mathematics Education (PME), Thessaloniki, Greece.

Tzur, R. (2008, November). Critical Roles Progress in Educational Theory Can Play in Research and Practice: Illustrations from Children's Conceptualisation of Number and Cognitive

Neuroscience Research. An invited presentation by the Australian-American Friendship Association for Academic Justice, the University of Adelaide, Australia.

Tzur, R. (2008, July). A researcher perplexity: Why do mathematical tasks undergo metamorphosis in teacher hands? A presentation within the context of PME Research Forum (Coordinated by R. Tzur, P. Sullivan, & O. Zaslavsky), Examining teachers' use of (non-routine) mathematical tasks in classrooms from three complementary perspectives: Teacher, teacher educator, researcher. Morelia, Mexico.

Tzur, R. (2007, July). The US National Science Foundation (NSF) undertaking of STEM education research: A "Rotator" viewpoint. A Visiting Scholar seminar presented to the Education Faculty at Monash University. Melbourne, Australia.

Tzur, R. (2007, July). Counter-intuitive teaching: Proposing a paradigm shift in mathematics (only?) teaching and teacher education. A Visiting Scholar seminar presented to the Education Faculty at Monash University. Melbourne, Australia.

Tzur, R. (2007, July). What and how might teachers learn via teaching: Contributions to closing an Unspoken Gap. A discussion of four papers presented at the Research Forum on Teacher Learning Through Teaching during the 31st annual meeting of the International Group for the Psychology of Mathematics Education. Seoul, South Korea.

Tzur, R. (2006, November). Brainteasers for number sense obstacles/milestones. The **opening** presentation at the **invitational** conference, The Neural Basis for Mathematical Development: Using Brain Imaging to Understand Mathematical Milestones, Obstacles to Expertise, and the Impact of Education. Vanderbilt University: Nashville, TN.

Tzur, R. (2005, March). Accountability in education: Advantages and disadvantages of an educational policy (in the U.S.A.) that stresses teachers' responsibility for continually monitoring and reporting on student achievements. An invited presentation at the Annual Lecture Seminar in Memory of the Late Asher Markus, Ben-Gurion University in the Negev, Beer-Sheva, Israel.

Tzur, R. (2005, March). Conceptual framework for the growth of mathematical understanding: Teaching that fosters learning of a new mathematical conception on the basis of available conceptions. An invited lecture seminar, the College of Humanities and Social Sciences at the Ben-Gurion University in the Negev, Beer-Sheva, Israel.

Tzur, R. (2004, October). A theoretical framework for conceptual learning and teaching: Teaching for transitions from available to new math conceptions. An invited presentation at the international conference: Studying the Development of Mathematical Reasoning, Emerald Isle, NC.

Tzur, R., Hagevik, R. A., & Watson, E. M. (2004). Fostering mathematical meaning via scientific inquiry: A case study. The 28th Annual Meeting of the International Group for the Psychology of Mathematics Education, Bergen, Norway.

Tzur, R. (2004, June). Implications for teaching of stage distinctions in the learning of a new mathematical conception. An interactive workshop at the Kay College for Teacher Education, Beer-Sheva, Israel.

Tzur, R. (2003, July). Teacher and students' joint production of a reversible fraction conception. The twenty-seventh annual meeting of the International Group for the Psychology of Mathematics Education, Honolulu, HI.

Tzur, R. (2002, July). From theory to practice: Explaining successful and unsuccessful teaching activities (case of fractions). The twenty-sixth annual meeting of the International Group for the Psychology of Mathematics Education, Norwich, UK.

Tzur, R. (2001, July). Re-evaluating assessment in light of an integrated model of mathematics teaching and learning. The twenty-fifth annual meeting of the International Group for the Psychology of Mathematics Education, Utrecht, The Netherlands.

Heinz, K., Simon, M.A., Kinzel, M., & **Tzur, R.** (1999, October). A Perspective on the Use of Manipulatives: Making Sense of a Teacher's Use of Base-Ten Blocks to Promote Understanding of the Long-Division Algorithm. The twenty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Cuernavaca, Mexico.

Tzur, R., & Simon, M.A. (1999, October). Postulating Relationships between Levels of Knowing and Types of Tasks in Mathematics Teaching: A Constructivist Perspective. The twenty-first annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Cuernavaca, Mexico.

Simon, M.A., & **Tzur, R.,** Heinz, K., Kinzel, M., & Smith, M.S. (1999, July). On Formulating the Teacher's Role in Promoting Mathematics Learning. The twenty-third annual meeting of the International Group for the Psychology of Mathematics Education, Haifa, Israel.

Tzur, R. (1999, July). Becoming a Mathematics Teacher-Educator: Conceptualizing the Terrain through Self-Reflective Analysis. The twenty-third annual meeting of the International Group for the Psychology of Mathematics Education, Haifa, Israel.

Tzur, R. (1999, July). Children's Mathematical Thinking. An interactive workshop presented at the summer preparation for teachers, "Plagim" Elementary School, Kibbutz Hazore'a, Israel.

Tzur, R., Simon, M.A., Heinz, K., & Kinzel, M. (1998, July). Meaningfully Assembling Mathematical Pieces: An Account of a Teacher in Transition. The twenty-second annual meeting of the International Group for the Psychology of Mathematics Education, Stellenbosch, South Africa.

Tzur, R. (1998, July). A Constructivist Model of Children's Learning of Fractions. An interactive seminar at the University of South Africa (UNISA), Pretoria, South Africa.

Tzur, R. (1998, July). A Constructivist Model of Children's Learning of Fractions. An interactive seminar at the Witwatersand University, Johannesburg, South Africa.

Tzur, R. (1998, July). A Constructivist Model of Children's Learning of Fractions. An interactive seminar at the Potchefstroom University, Potchefstroom, South Africa.

Tzur, R. (1998, April). A Theoretical Account of an Elementary Teacher in Transition. An interactive seminar at the Weizman Institute of Technology, Rehovot, Israel.

Tzur, R. (1996, December). A Constructivist Model of Affective and Cognitive Aspects of Mathematics Learning: Implications for Children's Fraction Learning. An interactive colloquium at the

Technion - Israel Institute of Technology (the Department of Sciences & Technology Instruction), Haifa, Israel.

Tzur, R. (1994, December). Aspects of Children's Learning of the Rational Numbers. A presentation at the Israeli Pedagogical Center for the Improvement of Mathematics Education (Keshet Cham), Be'er Sheva, Israel.

2. NATIONAL

Hodkowski, N. M., Hornbein, P., Gardner, A., Johnson, H. L., Jorgensen, C., & Tzur, R. (2016, October). Designing a stage-sensitive written assessment of elementary students' scheme for multiplicative reasoning. A paper presented at *the 38th annual meeting of the Psychology of Mathematics Education – North American Chapter*. Tucson, AZ.

Risley, R., Hodkowski, N. M., & Tzur, R. (2016, October). Devin's construction of a multiplicative double counting scheme: Focus on dual anticipation of start and stop. A paper presented at *the 38th annual meeting of the Psychology of Mathematics Education – North American Chapter*. Tucson, AZ.

Risley, R., Hodkowski, N., & **Tzur, R.** (2015, October). Jake's conceptual operations in multiplicative tasks: focus on number choice. A paper presented at *the 37th Annual Meeting of Psychology of Mathematics Education – North American Chapter*. East Lansing, MI.

Hunt, J. & **Tzur, R.** (2015, April). Teacher questioning: Goals and sub-goals during a constructivist-oriented teaching experiment. A paper presented at the annual meeting of the Council for Exceptional Children (CEC), San Diego, CA.

Tzur, R. (2014, June). Mathematics Teaching Matters - Especially for Students Who Struggle: Focus on Elementary Students' Development of Multiplicative Reasoning. A presentation to mathematics and/or special educators at the Annual Meeting of Utah Multi-Tiered System of Supports (UMTSS). Layton, UT.

Tzur, R. (2014, June). Mathematics Teaching Matters - Especially for Students Who Struggle: Focus on Middle School Students' Development of Fractional Reasoning. A presentation to mathematics and/or special educators at the Annual Meeting of Utah Multi-Tiered System of Supports (UMTSS). Layton, UT.

Tzur, R. (2014, June). Mathematics Teaching Matters - Especially for Students Who Struggle: Focus on Secondary Students' Reasoning with Variables and Co-Varying Quantities. A presentation to mathematics and/or special educators at the Annual Meeting of Utah Multi-Tiered System of Supports (UMTSS). Layton, UT.

Tzur, R., Thouless, H., Xin, Y. P., Courey, S., & Hunt, J. (2014, June). A working group (with presentation) at the 35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA). Chicago, IL.

Tzur, R. (2014, May). Examining Issues of Learning and Teaching Multiplicative Reasoning. A 1-day workshop for the Arizona Mathematics partnership team (mathematicians, mathematics educators, and math teachers). Scottsdale, AZ.

Tzur, R. & Depue, B. (2014, April). Brain processing of whole-number vs. fraction comparisons: Impact of constructivist-based task design on reaction time and distance effect. A paper presented at the peer-refereed Annual meeting of the American Educational Research Association (AERA), Philadelphia, PA.

Hunt, J., **Tzur, R.**, & Westenskow, A. (2014, April). Constructing the concept of unit fractions for students with learning disabilities. Paper presented at the Annual meeting of the Council for Exceptional Children (CEC), Philadelphia, PA.

Tzur, R. (2014, February). Promoting teachers and students' learning to reason multiplicatively: A units-and-operations developmental approach. A **plenary keynote talk** given at the Research on Undergraduate Mathematics Education (RUME) Annual Conference. Denver, CO.

Thouless, H., **Tzur, R.**, Courey, S., Lewis, K., Fisher, M., & Hunt, J. (2013, November). A working group (with presentation) at the 35th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA). Chicago, IL.

Park, J. Y., Xin, Y. P., Liu, J., Hord, C., **Tzur, R.**, & Si, Lu. (2013, April). *Exploring the effects of intelligent tutoring system on multiplicative reasoning and problem-solving of students with learning disabilities*. Paper presented at the Annual meeting of the American Educational Research Association (AERA), San Francisco, CA.

Xin, Y. P., Hord, C., Liu, J., Park, J. Y., **Tzur, R.**, & Si, L. (2013, April). *A comparison of teacher-delivered instruction and an intelligent tutor-assisted math problem-solving intervention program*. Paper presented at the Annual meeting of the American Educational Research Association (AERA), San Francisco, CA.

Tzur, R., Johnson, H. L., McClintock, E., & Risley, R. (2012, October). *Culturally-Mathematically Relevant Pedagogy (CMRP): Fostering Urban English Language Learners' Multiplicative Reasoning*. Paper presented at the 34th annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Kalamazoo, MI.

Tzur, R. (2012, May). Elaborating a brain-mind model of reflective abstraction: Task design for whole number and fraction schemes. A seminar presented to the faculty and students at the College of Education and the Department of Psychology at Virginia Tech. Blacksburg, VA.

Xin, Y. P., Hord, C., Park, J. Y., Liu, J., Bugdayci, A., **Tzur, R.**, & Si, L. (2012, April). *Make explicit the reasoning behind math problem-solving: Explore the effect of an intelligent tutor*. Paper presented at the American Educational Research Association (AERA) Annual Meeting. Vancouver, BC, Canada.

Xin, Y. P., Liu, J., Jones, S., **Tzur, R.**, Si, L. (2012, April). *Nurturing multiplicative reasoning in students with LD: A preliminary discourse analysis of reform-based math instruction*. Paper presented at the American Educational Research Association (AERA) Annual Meeting. Vancouver, BC, Canada.

Xin, Y. P., Park, J. Y., Hord, C., Liu, J., Bugdayci, A., **Tzur, R.**, & Si, L. (2012, April). Nurture Multiplicative Reasoning and Problem Solving through Concept Construction: The Effect of

an Intelligent Tutor. Paper presented at The 2012 CEC Annual Convention and Expo, Denver, CO.

Johnson, H. L., **Tzur, R.**, McClintock, E, Risley, R., King, K., Xin, Y.P., and Si, L. (2012, April). Opening multiplicative reasoning doors for all students: Task design for transfer-empowering learning. A paper presented at the annual meeting of the American Educational Research Association. Vancouver, BC, Canada.

Jin, X., and **Tzur, R.** (2011, April). ‘Bridging’: An assimilation- and ZPD-enhancing practice in Chinese pedagogy. A paper presented at the 91st Annual Meeting of the National Council of Teachers of Mathematics (Research Pre-Session). Indianapolis, IN.

Xin, Y.P., **Tzur, R.**, Woodward, J. (2011, April). Mathematics Problem Solving: Marriage of Heuristic and Explicit Instruction. The Annual Conference of the Council on Exceptional Children. Washington, DC.

Jin, X., and **Tzur, R.** (2011, January). Progressive incorporation of new into known: A Chinese pedagogical perspective on mathematics learning. A paper presented at the 15th Annual Conference of the Association of Mathematics Teacher Educators. Irvine, CA.

Tzur, R. (2010, October). How may conceptual *learning* in mathematics benefit from dual processing theories of *thinking*? A **keynote discussion** presented at the 32nd annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Columbus, OH.

Hord, C., Xin, Y. P., **Tzur, R.**, Si, L., Bugdayci, A. (2010, October). The experiences of a fourth-grade student with working memory deficits and a learning disability in mathematics within constructivist mathematics instruction. A poster session presented at the 32nd Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Columbus, OH.

Tzur, R., Xin, Y. P., Si, L., Kenney, R., and Guebert, A. (2010, May). Students with Learning Disability in Math Are Left Behind in Multiplicative Reasoning? Number as Abstract Composite Unit is a Likely ‘Culprit’. A paper presented at the Annual Meeting of the American Educational Research Association. Denver, CO.

Torbert, S., Vishkin, U., **Tzur, R.**, and Ellison, D. J. (2010, March). Is teaching parallel algorithmic thinking to high school students possible? One teacher’s experience. SIGCSE: The 41st ACM Technical Symposium on Computer Science Education Meeting. Milwaukee, WI.

Xin, Y. P., **Tzur, R.**, and Si, L. (2010, February). Computer-assisted, conceptual model-based problem solving to nurture multiplicative reasoning. A thematic research session presented at the 18th Annual Pacific Coast Research Conference (PCRC). Coronado, CA.

Hord, C. Xin, Y. P., **Tzur, R.**, Si, L., and Cetintas, S., (2010, February). A Comparison of model-based and constructivist methods for teaching multiplicative word problems to students with learning disabilities: A mixed methods explanatory approach. A poster session presented at the 18th Annual Pacific Coast Research Conference (PCRC). Coronado, CA.

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Woodward, J., Kenney, R., Zhang, D., Guebert, A., Cetintas, S., **Tzur, R.**, and Xin, Y. P. (2009, October). Conceptually based task design: Megan's progress to the anticipatory stage of multiplicative double counting (mDC). The 31st Annual Conference of the North American Chapter of the Psychology of Mathematics Education. Atlanta, GA.

Xin, Y. P., **Tzur, R.**, Si, L., Zhang, D., Hord, C., Luo, W., and Cetintas, S. (2009, October). Interweaving tasks and conceptions to promote multiplicative reasoning in students with learning disabilities in mathematics. The 31st Annual Conference of the North American Chapter of the Psychology of Mathematics Education. Atlanta, GA.

Zhang, D., Xin, Y. P., **Tzur, R.**, Hord, C., Si, L., and Cetintas, S. (2009, October). How do changes happen? Transition from intuitive to advanced multiplicative reasoning for students with math disabilities. The 31st Annual Conference of the North American Chapter of the Psychology of Mathematics Education. Atlanta, GA.

Vishkin, U., **Tzur, R.**, Ellison, D., & Caragea, G. (2009, July). Parallel Programming for High Schools. A **keynote presentation** given at the Carnegie Mellon University Summer Workshop for High School Computer Science Teachers. (Note: CS content was Vishkin's responsibility; preparing the entire workshop, including slides for Vishkin's part, and leading the educational components of the workshop was solely Tzur's responsibility.)

Tzur, R. (2008, July). Teaching and learning for conceptual understanding of fractions as multiplicative, relational quantities. A presentation at the annual Park City Mathematical Institute annual, invitational-only meeting of mathematicians, mathematics educators, and mathematics teachers. Park City, Utah.

Tzur, R. (2006, August). Evaluation Plan for Project Bright IDEA-2. An interactive presentation and workshop for elementary superintendents in North Carolina, Raleigh, NC.

Tzur, R. (2003, July). Teacher and students' joint production of a reversible fraction conception. The twenty-fifth annual meeting of the North-American Chapter of the International Group for the Psychology of Mathematics Education, Honolulu, HI.

Hagevik, R.A., Watson, M.E., **Tzur, R.** (2003, March). A prospective teacher relates scientific and mathematical conceptions: Generating a 2-D graph for a 3-D topographical model. The annual conference of the National Association for Research in Science Teaching. Philadelphia, PA.

Tzur, R. (March, 2002). From theory to Practice: Explaining successful and unsuccessful teaching activities (case of fractions). The semi-annual meeting of the National Academy of Education (Spencer Foundation). Boston, Massachusetts.

Tzur, R. (October, 2001). Model-based perturbation: How to assess in class. The semi-annual meeting of the National Academy of Education (Spencer Foundation). Berkeley, California.

Simon, M.A., **Tzur, R.**, Heinz, K., Kinzel, M., (2000). Articulating Theoretical Constructs for Mathematics Teaching. The twenty-second annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Tucson, AZ.

Simon, M.A., **Tzur, R.**, Heinz, K., Kinzel, M., & Smith, M.S. (1998). Characterizing A Perspective on Mathematics Learning of Teachers in Transition. The twentieth annual meeting of the

North American Chapter of the International Group for the Psychology of Mathematics Education, Raleigh, NC.

Heinz, K., Kinzel, M., Simon, M.A., & **Tzur, R.** (1997, October). One Teacher's Solution to Reforming Mathematics Teaching. A presentation at the nineteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Bloomington/Normal, IL.

Tzur, R., & Timmerman, M. (1997, October). Why Do We Invert and Multiply: Elementary Teachers' Struggle to Make Sense of Division of Fractions. A presentation at the nineteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Bloomington/Normal, IL.

Simon, M. A., **Tzur, R.**, Ball D. L., & Stimpson, V. (1997, April). Teachers' Construction of New Models of Teaching. A thematic presentation at the Research Presession of the seventy-fifth annual meeting of the National Council of Teachers of Mathematics, Minneapolis, MN.

Tzur, R. (1997, April). Conceptually-Oriented Use of Tools for Elementary Mathematics Learning. A presentation at the seventy-fifth annual meeting of the National Council of Teachers of Mathematics, Minneapolis, MN.

Tzur, R. (1996, October). Relationship of Affective and Cognitive Aspects of Learning. A presentation at the eighteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Panama City, FL.

Olive, J., & **Tzur, R.** (1995, November). Children's Construction of Fractions Using Tools for Interactive Mathematical Activity (TIMA) Microworlds. A presentation at the sixteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education, Baton Rouge, LA.

Tzur, R. (1995, April). Teaching-Learning Interaction and Children Construction of the Equi-Partitioning Scheme. A presentation at the annual meeting of the American Educational Research Association, San Francisco, CA.

Tzur, R. (1994, November). Undergraduate Mathematics Course with No Tests: Is It Possible? Is It Good? A presentation at the twenty-fifth anniversary conference of the Mathematics Education Department at the University of Georgia, Athens, GA.

Tzur, R. (1994, November). Interaction and Fraction Knowledge: Children's Construction of the Iterative Partitioning Scheme. A presentation at the sixteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. Baton Rouge, LA.

Tzur, R., Brooks, K., Enderson, M., Morgan, M., and Cooney, T. J. (1993, October). Teachers' Use of Alternate Assessment Methods. A presentation at the fifteenth annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education. San Jose, CA.

3. STATE AND LOCAL

Tzur, R. and Hodkowski, N. (2015, September). Does “America” have a concept of number? A whole-day workshop (two presentations) for elementary teachers at Aurora Public Schools.

Tzur, R. & Zola, P. (2014, December). Joining forces, amplifying voices: Insights from collaborative preparation of teachers in STEM content and student-adaptive pedagogy. A **plenary panel** presentation at the annual meeting of the Colorado STEM Teacher Preparation, Longmont, CO. (Note: Peter Zola is a graduate of the UCD program for preparing elementary teachers, working at Laredo Elementary for the second year in the time of presentations.)

Tzur, R. (2013, July). Quality (Math) Teachers for English Learners (QTEL). A 1-week workshop conducted for prospective and practicing teachers at the University of Missouri – St. Louis. St. Louis, MO.

Tzur, R. (2013, May). Where in the brain is fraction? An interactive session presented to members of Kibbutz Mishmar-Haemek (focus on mathematics teachers). Mishmar-Haemek, Israel.

Tzur, R. (2013, April). Where in the brain is fraction? A seminar presented at the CU Denver School of Education and Human Development Doctoral Colloquium. Denver, CO.

Tzur, R. & Depue, B. (2013, February). Where in the brain is fraction? A seminar presented to the Cognitive Neuroscience group at the University of Colorado Boulder. Boulder, CO.

Tzur, R. (2012, February). Fostering every student’s mathematics via the Chinese lesson component of Bridging: Adapting a pedagogical practice from math education champions. A seminar presented to the graduate faculty and students at Fayetteville State University. Fayetteville, NC.

McClintock, E., and **Tzur, R.** (2012, January). Engendering a Transfer-Enabling, Anticipatory Stage of a Multiplicative Reasoning Concept: The Case of Sam. A seminar presented to the Doctoral and Research Faculty of the School of Education and Human Development at the University of Colorado Denver. Denver, CO.

Tzur, R. (2010, October). Reflection on Activity-Effect Relationship: Preliminaries to A Brain-Mind Model of STEM Learning. A seminar presented to the MSLE faculty group at the University of Colorado Denver. Denver, CO.

Tzur, R. (2009, December). Brain-Based Inquiry of Math Learning in the US and China. A seminar presented to the Brain Imaging Center Faculty at the University of Colorado Medical School (Anschutz Campus) as introduction to development of a collaborative research proposal. Denver, CO.

Tzur, R. (2009, October). Early Numeracy: Research Findings that Make a Difference in Students’ and Teachers’ Lives. An presentation at the Annual Conference of the Colorado Council of Teachers of Mathematics. Denver, CO.

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Tzur, R. & Lambert, M. A. (2009, August). Bright IDEA - and Math Left Behind? A 2-day workshop for Project Bright IDEA-2 elementary teachers (K-2). North Carolina Department of Public Instruction: Raleigh, NC.

Tzur, R. (2009, March). A half-day, invitational workshop for all the mathematics faculty at the Fuquay-Varina High School (NC).

Tzur, R. (2007, June). Promoting K-2 teachers' content-knowledge for teaching mathematics: Sweetening learning of number knowledge with M&M activities. A 2-day workshop for Project Bright IDEA-2 principals and gifted/talented coordinators. North Carolina Department of Public Instruction: Raleigh, NC.

Tzur, R. (2006, October). Theoretical Framework for Conceptual Learning & Teaching: Teaching for Transitions from Available to New Conceptions. An interactive, ½-day workshop for Project INSPIRE team, Engineering Education Department at Purdue: West Lafayette, IN.

Tzur, R. (2006, April). Evaluation Plan for Project Bright IDEA-2. An interactive presentation and workshop for elementary superintendents in North Carolina, Raleigh, NC.

Tzur, R. and Marshall, P. (2006, January). Nurturing Mathematics Dreamkeepers Workshop #3. A 2-day workshop for 24 elementary teachers and principals from Wake County, North Carolina, focusing on teachers' mathematical content knowledge, pedagogical understandings, and ability to understand students' conceptions (of math and culture).

Tzur, R. (2005, November). Nurturing Mathematics Dreamkeepers Workshop #2. A 2-day workshop for 24 elementary teachers and principals from Wake County, North Carolina, focusing on teachers' mathematical content knowledge, pedagogical understandings, and ability to understand students' conceptions (of math and culture).

Tzur, R. and Marshall, P. (2005, October). Nurturing Mathematics Dreamkeepers Workshop #1. A 2-day workshop for 24 elementary teachers and principals from Wake County, North Carolina, focusing on teachers' mathematical content knowledge, pedagogical understandings, and ability to understand students' conceptions (of math and culture).

Tzur, R. and Marshall, P. (2005, August). Introducing the Nurturing Mathematics Dreamkeepers Project. A half-day presentation and workshop for Title-I elementary school K-2 teachers in Wake County, North Carolina.

Tzur, R. and Marshall, P. (2005, June). Introducing the Nurturing Mathematics Dreamkeepers Project. A half-day presentation and workshop for Title-I elementary school principals in Wake County, North Carolina.

Tzur, R. (2005, February). Evaluation Plan for Project Bright IDEA-2. An interactive presentation and workshop for elementary superintendents in North Carolina, Raleigh, NC.

Tzur, R. (2004, September). Evaluation Plan for Project Bright IDEA-2. An interactive presentation and workshop for elementary superintendents in North Carolina, Raleigh, NC.

Tzur, R. (2003, April, June, November). Teaching Early Number Knowledge to Talented and Gifted K-2 Students. Three 2-day interactive workshops for Project Bright IDEA teachers and principals, organized by the North Carolina Department of Public Instruction and the American Association for Gifted Children (Duke University), Thomasville, NC.

Tzur, R. (1998, August). Proportionality in Algebra. An interactive workshop at the Pennsylvania Governor's Summer Institute for elementary and middle schoolteachers, State College, PA.

Tzur, R. (1998, June). A Developmental Schema for Children's Construction of Fraction Knowledge Using Computer Microworlds. An interactive one-week workshop for middle school teachers of the Phoenixville Middle School, Phoenixville, PA.

Tzur, R. (1997, March). Division of Fractions: Why Do We Invert and Multiply? A presentation at the forty-sixth annual meeting of the Pennsylvania Council of Teachers of Mathematics, Valley Forge, PA.

Tzur, R. (1996, March). Conceptually-Oriented Use of Technology for Elementary Mathematics Learning. A presentation at the forty-fifth annual meeting of the Pennsylvania Council of Teachers of Mathematics, White Haven, PA.

FUNDED/PENDING RESEARCH PROJECTS

National Science Foundation (NSF)

\$3,000,000 (funded July 2015)

July 2015 – June 2019

I serve as PI for this four-year research project, *Student-Adaptive Pedagogy for Elementary Teachers: Promoting Multiplicative and Fractional Reasoning to Improve Students' Preparedness for Middle School Mathematics*. I led the writing of this proposal for a collaborative effort with Aurora Public Schools, with an interdisciplinary team at CU Denver, including Drs. Heather Johnson, Sally Nathenson-Mejia, Alan Davis, Maria Uribe, and Michael Ferrara (from MATH).

National Science Foundation (DRL)

\$3,000,000

August 2008 to July 2014

Serve as co-PI for the six-year research & development project, *Nurturing Multiplicative Reasoning of Students with Learning Disabilities in Computerized Conceptual-Modeling Environment*, including writing of entire proposal, supporting project post-award management by inexperienced PI from Purdue, leading Study 1 (teaching experiment of students' conceptions), and overseeing Study 2 & 3.

Colorado University at Denver (Faculty Development, CU Resources, Private Funding)

\$20,000

July 2011 – June 2013

Serve as PI for the three-year research project, *Where in the Brain is Fraction?*, including writing the proposal in collaboration with co-PIs Dr. Dietmar Cordes from the Anschutz Medical Campus and Dr. Brendan Depue from CU Boulder, designing paradigms for testing whole numbers and fractions in the computer, working with cognitive neuroscientists from UC Boulder on preparation and scanning of participants in the new fMRI unit, analyzing results with these two experts, publishing our findings and writing a large-scale, \$500,000 grant proposal based on this pilot study (not funded, currently under revision)

National Science Foundation (CISE)

\$50,000

August 2008 to July 2009

Serve as co-PI for the 1-year research project Teachers' Learning to Teach Parallel Algorithmic Thinking (PAT), including co-writing the proposal with PI Dr. Vishkin from the University of Maryland, conducting planning sessions with the two case study teachers, and collecting and analyzing data of their teaching PAT in high school classrooms.

National Science Foundation (ESIE)

\$240,000

February 2006 to July 2007

Served as a Program Director (IPA from Purdue University), including proposal review panels, project (post-award) management, and development of new program solicitations.

National Science Foundation (TPC, Supplement)

\$351,000

September 2005 to August 2009

Served as a PI for the five-year project Nurturing Mathematics Dreamkeepers. This project studied how K-2 teachers develop understandings and practices of teaching early number knowledge to students of diverse cultural backgrounds, particularly African American, so that no child is left behind.

National Science Foundation (TPC)

\$3,655,000

September 2004 to August 2009

Served as a PI for the five-year project Nurturing Mathematics Dreamkeepers. This project studies how K-2 teachers develop understandings and practices of teaching early number knowledge to students of diverse cultural backgrounds, particularly African American, so that no child is left behind.

Spencer Foundation – National Academy of Education

\$45,000

September 2000 to August 2002.

Served as the PI for a two-year fellowship research project, Relating Conceptual Learning and Teaching in Mathematics.

National Science Foundation (RED)

\$1,000,470

August 1996 to December 2000

Served as a Co-PI (with PI Marty Simon) for the Mathematics Teacher Development (MTD) Project.

Lucent Technologies Foundation

\$450,000

August 1999 to July 2002

Served as a Co-PI and a mathematics educator leader in the team of the new professional development (elementary) school (PDS) partnership between Penn State University and State College Area School District.

PROFESSIONAL ORGANIZATIONS

American Educational Research Association, 1992-present
Association of Mathematics Teacher Educators (AMTE), 1997-present
Australian Association of Mathematics Teachers (AAMT), 2008-2009
Cognitive Science, 2011-2014
Council on Exceptional Children (CEC), 2010-present
International Group for the Psychology of Mathematics Education, 1991-present
Jean Piaget Society, 2012-2015
John Dewey Society, 1997-2015
Mathematics Association of South Australia (MASA), 2008-2009
National Council of Teachers of Mathematics, 1991-present
North American Chapter of the International Group for the Psychology of Mathematics Education, 1993-present
Special Interest Group for Research in Mathematics Education (affiliated with American Educational Research Association), 1996-present

PROFESSIONAL SERVICE

1. NATIONAL AND INTERNATIONAL ORGANIZATIONS

National Science Foundation, Review Panel, Member. 2015.

International Psychology of Mathematics Education Group, Coordinator/Organizer of Working Group on Mathematics Education for Students with Learning Disabilities, 2012-2016.

International Psychology of Mathematics Education Group, Coordinator/Organizer of Research Forum on Mathematics Education and Cognitive Neuroscience, 2014-present.

North American Chapter of the Psychology of Mathematics Education Group, Coordinator/Organizer of Working Group on Mathematics Education for Students with Learning Disabilities, 2012-2016.

International Committee of the International Group for the Psychology of Mathematics Education, Secretary, 2004-2005.

International Committee of the International Group for the Psychology of Mathematics Education, Member, 2002-2006.

Review Panel for the Teacher Professional Continuum program of the National Science Foundation (NSF), Reviewer, 2004, 2005.

Review Panel for the Research on Learning and Education (ROLE) Division of the National Science Foundation (NSF), Reviewer, 2002.

2. UNIVERSITY OF COLORADO DENVER

UCD – Chancellor’s Distinguished Lecture Series Committee, Member, 2015.

UCD – SEHD Table Discussion Leader during the Arne Duncan Event. 2015.

SEHD – STEM Education Program Representative. 2014-2016.

UCD – SEHD representative to Budget and Priorities Committee (BPC). 2014.

SEHD – Collaboration for infusing brain research into teacher education practices with CO School of Mines colleagues (C. Howell). 2012-2015.

SEHD – District Professor role – collaborative work focusing on mathematics teaching and learning at Aurora Public Schools, 2013-2015.

SEHD – New Student Open-House Orientation, faculty member participant. 2013-present.

SEHD - Dean’s Leadership and Finance Committee, Member, 2012-2014.

SEHD – Retention, Promotion, and Tenure (RTP) Committee, Member (2012), Chair (2013), Member (2014).

New Faculty (Johnson) Mentor, 2010-2015.

Curriculum and Pedagogy (Math & Science) Program: Member, 2009-present; Representative – 2009-2011, 2014-2015.

Doctoral Studies Faculty Group, member, 2009-present.

Secondary Mathematics Education Program Committee, member, 2009-2015

SEHD – Faculty member supporting the organization of an event (hosted by SEHD) with Dr. John Medina about linking brain research to teaching and education, 2011-2013.

SEHD – Goldrick Elementary Students and Teachers Celebration, organizing team member (with J. Cummings and M. Uribe). 2013.

SEHD – Research Annual Merit Review Committee, Member, 2011-13.

SEHD - Doctoral and REM Faculty Affiliation, Chair, 2010-2011; Member, 2011-present.

SEHD - Mathematics and Science Education Program, Chair, 2010-2011; Member, 2011-present.

SEHD – Urban Communities Teacher Education (UCTE) program, member, 2010-present.

SEHD - Dean Search Committee, Member, 2010-2011.

Mathematics Education Search Committee, Co-Chair, 2009-2010.

Research Committee, member, 2009-2010.

UCTE Faculty Group, member, 2009-2013.

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3. UNIVERSITY OF ADELAIDE

(Post) Graduate Coordinator, School of Education, 2008.

South Australian Research In Education (SARIE) policy and discussion committee, School of Education representative, 2008.

South Australian Mathematics Education Inter-University Group, School of Education representative, 2008.

4. PURDUE UNIVERSITY

Promotion & Tenure Committee, Curriculum and Instruction Department, 2006-2008.

5. NORTH CAROLINA STATE UNIVERSITY

Administrative Board of the Graduate School, College of Education Representative, 2002-2005.

University-wide Committee for International Programs, College of Education Representative, 2003-2004.

Faculty Advisory Committee to the Ida and William Friday Institute for Educational Innovation, Mathematics Education Representative, 2002-2004.

Graduate Curriculum Studies Committee, Member, 2002-2006.

Doctoral Exam Policy Committee, Mathematics Education Representative, 2002-2003.

6. PENN STATE UNVIERSITY

Faculty Council, Chair of Faculty, Staff, and Student Concerns Sub-Committee, 1999-2000.

Faculty Council, Vice Chair of Graduate Studies and Research Policy Sub-Committee, 1998-1999.

Curricular Affairs Committee of the Curriculum and Instruction Department, Member, 1995-1997.

6. UNIVERSITY OF GEORGIA

Mathematics Education Student Association, Vice Chair, 1994-1995.

7. EDITORIAL SERVICE

Guest Co-Editor of a special issue of the *Learning Disability Quarterly* journal, focused on mathematics teaching and learning for struggling/at-risk students. 2015-2016.

Editorial Board

Educational Studies in Mathematics (2002-2006)

Frequent Manuscript Reviewer (8-10 per year)

Cognition and Instruction

International Journal for Science and Mathematics Education

Journal for Research in Mathematics Education

Journal of Mathematics Teacher Education

Journal of Mathematical Behavior

Mathematical Thinking and Learning

Science Education

Presentation Proposal Reviewer (6-8 per year)

American Educational Research Association (SIG/RME)

Psychology of Mathematics Education (PME)

Psychology of Mathematics Education, North American Chapter (PME-NA)

8. CONSULTING

Montana State University. Consulting for the State-funded project, *Exploring Mathematics with Analogous Tasks (EMAT)*. 2015-2016.

University of Texas Austin. Advisory Board Member on the NSF-funded project, *Fraction Activities and Assessments for Conceptual Teaching (FAACT)* for Students with Learning Disabilities. 2015-2020.

University of Illinois at Chicago. Consulting for the NSF-funded project, *Improving Formative Assessment Practices: Using Learning Trajectories to Generate Resources that Support Teacher Instructional Practice and Student Learning*. 2014-2017.

Haifa University, Israel. Consultant/presenter for the *National Advanced Mathematics Club* (high school teachers). 2015.

Arizona Mathematics Partnership, Teaching multiplicative reasoning – a workshop to the ASU faculty and project leadership team (including teachers) of this NSF-funded project (2014, May).

Utah State University, Teaching Fractions to Students with Learning Disability project: Providing SPED colleagues with guidance and support to conduct their University- and NSF-funded projects so they can shift their perspective/practice and conduct a constructivist teaching experiment to promote such students' conceptual understandings (2013-2015).

Fayetteville State University (NC), Advisory Board Member on the NSF-funded Noyce project Preparing future Educators for Placement in K-12 Mathematics and Science Classrooms (PrEP), conducted by Dr. Shelton Ford (2012-2014).

VA Tech, Advisory Board Member on the NSF-funded project Gateways to Algebraic Motivation, Engagement and Success (GAMES): Supporting and Assessing Fraction Proficiency with Game-Based, Mobile Applications and Devices, conducted by Drs. Michael Evans and Andy Norton (2011-2014).

Castle View High School, Mathematics teaching consultant for the reform promoted in this high school (2013, September).

University of Missouri – St. Louis, Quality Teacher for English Learners (QTEL) project: Providing elementary teachers with summer workshops and interactive online problem-solving sessions to promote their mathematical content knowledge for teaching (MCKT), conducted by Dr. Kim Song (2013-2014).

Montana State University, consulted with Dr. Fenqjen Luo in support of her writing of a new proposal about mathematics teacher development (2012-2013).

Florida Atlantic University, consulted with interdisciplinary team to help with their writing of a new proposal about developing technology-based materials for teaching Algebra-I and Geometry (submitted to the US Department of Education in June, 2011; revised and resubmitted June, 2012).

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Privately-funded (Bechtel) Project INSPIRE, conducted by PI Heidi Diefes-Dux, Department of Engineering Education at Purdue University, 2006-2008.

NSF-funded Project EAMCL, conducted by PI Marty Simon, Curriculum & Instruction Department at Penn State University, 2005-2006.

U.S. Department of Education funded Bright IDEA-2 project for promoting K-2 teachers' competence in teaching gifted and talented minority students in North Carolina, Duke University and North Carolina Department of Public Instruction, 2004-2009.

Bright IDEA-1 project for K-2 gifted and talented minority students in North Carolina, Duke University and North Carolina Department of Public Instruction, 2002-2004.

Mathematics Teacher Development, a National Science Foundation project at the Pennsylvania State University, 2000-2002.

“Plagim” Elementary School at Kibbutz Hazorea (mathematics department), Israel, 2000-2001.

Children's Construction of the Rational Numbers of Arithmetic, a National Science Foundation project at the University of Georgia, 1996, 1998, 2000.

GOAL 2000 - The Pennsylvania State University teacher enhancement project for practicing and prospective elementary teachers, 1996-1997.

Process Approach to Math in the Middle School (PAMMS), a curriculum project of the Mathematics Section of the Curriculum Research and Development Group (CRDG), at the University of Hawaii at Manoa, 1995.

The Israeli Pedagogical Center for the Improvement of Mathematics Education (Keshet-Cham), professional development activities for high school mathematics teachers and department heads across Israel, 1994-1995.

Louisiana Systemic Initiative Program (LaSIP), a National Science Foundation project for K-12 mathematics teachers, 1994.

Research and Development Initiatives Applied to Teacher Education (RADIATE), a National Science Foundation project for preservice high school mathematics teacher at the University of Georgia, 1993-1994.

Mass-Matics, curriculum research and development project for non-college-bound high students in Israel at the Technion, 1992-1993.

9. PUBLIC SERVICE (Not included in consulting for pay)

Goldrick Elementary School, Denver, CO, 2010-2014. Conducting 9 teacher workshops, teaching 4th grade students with learning disabilities in mathematics, and co-teaching a 4th grade classroom and a 3rd grade classroom to model how to foster multiplicative reasoning in the children.

Our Children's Center (Montessori) Pre-School, State College, PA., 1995-96. [Speaker]

Department of Education of the Hashomer-Hatsair Youth Movement (responsible for 70 centers across Israel, 1987-89. [Department Head]

Hashomer-Hatsair Youth Movement annual conferences, 1988, 1989. [Chair]

Board of Trustees of the High School at Kibbutz Mishmar-Haemek, Israel, 1982-84. [Representative]

HONORS AND AWARDS

University of Colorado Denver – School of Education and Human Development's Annual Research Merit Award (thus now competing for the University-wide Research Award), 2015-16.

North Carolina State University Faculty Academic Advising Award (Finalist), April 2002.

Penn State University College of Education Outstanding Faculty Award (Finalist), 1999.

The Association of Teacher Educators Annual Distinguished Research Award, February, 2000 (for the paper: Heinz, K., Kinzel, M., Simon, M.A., & Tzur, R. (in press). Moving students through steps of mathematical knowing: An account of the practice of an elementary mathematics teacher in transition. Journal of Mathematical Behavior

The University of Georgia Graduate School Teaching Assistant Enhancement Award, 1994-1995.