

Boris Koichu – Curriculum Vitae

A. PERSONAL DETAILS

Date of birth: March 9, 1967.

Immigration to Israel: November 24, 1998.

Citizenship: Israel.

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B. EDUCATION

Postdoctoral Fellowship

Institution and location: University of California San Diego, USA.

Duration: 2004-2006.

Field of study: Mathematics Education.

Advisor: Prof. Guershon Harel.

Ph.D.

Institution and location: Technion, Haifa, Israel.

Duration: 1999-2004.

Field of study: Mathematics Education.

Thesis title: “Junior high school students' heuristic behaviors in mathematical problem solving”.

Advisors: Prof. Avi Berman, Associate Professor Michael Moore.

M.Sc. (by direct five-year track, with honors)

Institution and location: State University of Lviv, Lviv, Ukraine.

Duration: 1984-1985; 1987-1991¹.

Field of study: Mathematics.

Thesis title: “Oscillating component of realization’s integral function for constructing a solution’s rule”.

Advisor: Dr. Vladimir Sivers.

¹ The break in the five-year direct track is due to the military service in 1985-1987.

C. EMPLOYMENT HISTORY

- Weizmann Institute of Science, Department of Science Teaching, **Full Professor**, since 2023.
- Weizmann Institute of Science, Department of Science Teaching, **Associate Professor** (with tenure), 2017-2023.
- Simon Fraser University, Burnaby, Canada, Invited **Visiting Professor**, February-July 2016, on sabbatical leave from the Technion. The visit is supported by a grant from the Simon Fraser University.
- Simon Fraser University, Burnaby, Canada, Invited **Visiting Professor**, temporary appointment for August-October 2013. The visit is supported by a grant from the Simon Fraser University.
- The Technion, Faculty of Education in Science and Technology², **Assistant Professor** (with tenure), 2012-2017.
- The Technion, Faculty of Education in Science and Technology, **Senior Lecturer**, 2006-2012.
- University of California San Diego, USA, Faculty of Mathematics, **Postdoctoral Fellow**, 2004-2006.
- The Technion, Faculty of Education in Technology and Science, **Adjunct Lecturer**, 2003.
- The Technion, Faculty of Education in Technology and Science, **Teaching Assistant**, 2000-2003.

Employment prior to 1999 is listed below in Section E.

² Former (until 2015) Department of Education in Science and Technology.

D: ACADEMIC ADMINISTRATION

Weizmann Institute of Science

- Head of the Department of Science Teaching, since November 2024.
- Chair of the Board of Studies of the Department of Science Teaching, September 2021- October 2024.
- Head of the Mathematics Group of the Department of Science Teaching, March 2018-October 2024.
- Coordinator (with Prof. Sergei Yakovenko) of the mathematics track of the Rothschild-Weizmann M.Sc. program, March 2018-October 2022.
- Coordinator of the seminar of the Mathematics Group at the Department of Science Teaching, October 2017-July 2019.

Technion

- Head of the Mathematics Education track at the Faculty of Education in Science and Technology, 2013-2017.
- Coordinator of undergraduate studies at the Faculty of Education in Science and Technology, 2013-2016.
- Coordinator of the program for excellent undergraduate students at the Faculty of Education in Science and Technology, 2008-2016.
- Coordinator of the Center for Learning Initiatives and Professional Development at the Faculty of Education in Science and Technology, 2011-2015.
- Coordinator of the cooperation between the Faculty of Education in Science and Technology and the Technion Center of Pre-Academic Study, 2011-2015.
- Person in charge of the communication and information technologies at the Faculty of Education in Science and Technology, 2011-2013.
- Coordinator of studies for earning an additional B.Sc. degree at the Faculty of Education in Science and Technology, 2011-2013.
- Coordinator of studies for earning a teaching certificate at the Faculty of Education in Science and Technology, 2011-2012.
- Coordinator of M.Sc. studies with specialization in fostering giftedness and excellence at the Faculty of Education in Science and Technology, 2009-2012.
- Coordinator of activities aimed at attracting new undergraduate students at the Faculty of Education in Science and Technology, 2008-2010.
- Coordinator (with Dr. Abigail Barzilay) of the Teaching Club – a forum for lectures and discussions on university level teaching, 2007-2010.
- Coordinator of the departmental seminar at the Faculty of Education in Science and Technology, 2006-2008, 2010.

E: OTHER APPOINTMENTS

Teaching in academy

Weizmann Institute of Science

- *Graduate courses* (since 2017): Research in teaching and learning geometry (with Rina Hershkovitz), Research in teaching and learning algebra (with Alex Friedlander), Cognition, learning and instruction (with Yael Shwartz), Introduction to mathematics education (with Jason Cooper), Calculus from research on students' conceptions to a high school curriculum, Research on fostering creativity and giftedness, Problem solving in mathematics – Part B, Cognition, learning and instruction – advanced course (with Abraham Arcavi), Creativity, giftedness and heterogeneity; Evaluation of educational projects (with Aamer Badarneh).

Technion

- *Undergraduate courses*: Mathematics in senior high school (2002-2003), Selected problems in mathematics A (2006-2017), Selected problems in mathematics B (2006-2012), Teaching methods and skills (as a TA, 2000-2003), Geometry in junior high school (as a TA, 2003).
- *Graduate courses* (2006-2017): Advanced workshop in teaching mathematics, Fostering excellence in mathematics, Research in mathematics education and its implications in teaching, Innovative approaches to assessment in mathematics education, Foundations of educational research, Advanced seminar in creativity and giftedness, Mathematical models as motivation, Proof and justification in mathematics education, Educational aspects in history of math, Studies in mathematics education, Evaluation of educational projects.

Teacher Professional Development

- A series of workshops “Special ideas for mathematics lessons,” October 2023-2024.
- A series of workshops for the TRAIL (Teacher-Research Alliance for Investigating Learning) project (see p. 8) at different teacher forums (conferences, professional learning communities), December 2017-2024.
- A series of workshops for the RBMC (Raising the Bar in Mathematics Classrooms) project (see p. 8) at different teacher forums (conferences, professional learning communities), November 2020-ongoing.
- A series of workshops for five communities of heads of middle-school mathematics departments (see p. 8), November 2019-July 2021.
- Co-leader (with Jason Cooper) of a community of heads of middle-school mathematics departments in Holon, December 2017-October 2018.
- Two workshops “If not, what yes?”, for mathematics teachers taking part in a professional development program “Excellence in math teaching”, Davidson Institute, Weizmann Institute of Science, June 2017, June 2018.

- A course "Selected Problems in Mathematics," as a part of professional development program for mathematics teachers who wish to teach mathematics at 5 and 5++ credit point level. Technion, Winter 2015-2016.
- Two lectures on mathematical reasoning for teachers who studied towards qualifying for ranks 7-9 in the project "New horizons" (Ofek Hadash). Technion, 2012, 2013.
- Ten lectures on mathematical problem solving for teacher-participants in different professional development projects. Weizmann Institute of Science, 2003, 2009, 2011, 2013, 2014, 2017, 2019; Gordon College of Education, 2008, 2009.
- Three lectures on origins of students' misconceptions in mathematics, at the workshops organized by the Ministry of Education. Rehovot, Haifa and Nazareth, 2008.
- Two lectures on assessment in mathematics education at the workshop organized by MOFET association. Hakfar Hayarok, 2007, 2009.

Teaching at school level

- **Guest lecturer**, San Diego Math Circle, 2005.
- **Instructor** at the SAKTA RASHI Foundation project "Gifted High School Students from Unprivileged Districts Prepare for Undergraduate Studies", 2003.
- **Mentor of student research projects at SciTech** – Technion International Summer Research Programs for gifted students, 2001-2003. Projects:
 - Spatial Analogues of Ceva's Theorem and their Applications*
 - Mathematical Modeling and Difference Equations*
 - Reconstructions by Means of Compass and Ruler: Antique Curves Revived.*
- **Supervisor** of high school final projects in mathematics, 2002.
- **Instructor**, a course "Development of mathematical thinking". The Center for Gifted Students at the Ort Braude College of Engineering, Karmiel, 2000-2003.
- **Guest lecturer**, preparatory workshops of the Israeli Team for International Mathematical Olympiad, 1999-2000.
- **Coach** of the district team for Ukrainian Mathematical Olympiads, Lviv, Ukraine, 1992-1998.
- **Mathematics teacher**, secondary school named after N. Lobachevski, Lviv, Ukraine, 1991-1998. Teaching full range of mathematics subjects for junior-high and high-school students; teaching in special classes for mathematically promising and gifted students.

Membership in Committees (Israel)

Weizmann Institute of Science

- Member of the Board of Studies of the Department of Science Teaching, October

2020- August 2021 (chair between September 2021 – October 2024, see p. 4)

- Member of the IRB (Institutional Review Board) for Educational Research, 2017-ongoing.

Technion

- Head of the Education Committee of Technion Citizen Science Project (TCSP) and a member of TCSP steering committee, 2014-2017.
- Member of the Technion inspection committee on the constitution of the animal experimentation, 2014-2015.
- Member of the teaching committee of the Faculty of Education in Science and Technology of the Technion, 2011-2016.
- Member of the Technion ICT coordination committee (as the person in charge of the communication and information technologies at the Faculty of Education in Science and Technology), 2011-2013.

Israel Science Foundation

- Member of the ISF Committee for reviewing research proposals (Technology, Mathematics and Science Education), 2011-2012, 2015-2016.

Israel Academy of Science and Humanity

- Member of the Working Group for Advancement of Research-Practice Partnerships, March– October 2022.

Azrieli Foundation

- Member of the Education Committee of Azrieli Fellows program, since February 2022.

Ministry of Education

- Member of the Superior Committee for mathematics instruction in elementary school, 2017-ongoing (appointed by the Mathematics Superintendent of the Ministry of Education).
- Member of the steering committee of the research project “Integrating Mathematical Applets in the Teaching Sequence” (PI Michal Tabach), 2017-2021 (appointed by the Chief Scientist Office of the Ministry of Education).

Academic Promotion Committees

- Member in 15 promotion committees and a chair of one promotion committee in Israel, since 2015.

Evaluation of Academic Programs

- An external evaluator of M.Ed. programs of seven Israeli academic colleges (appointed by the Council for Higher Education), since 2018.

Ph.D. and M.Sc. Committees and Exams

- In Israel: 56 Ph.D. theses; 26 M.Sc. theses; 45 Ph.D. proposals, since 2006. In Denmark: one Ph.D. thesis (2019). In Canada: one Ph.D. thesis (2023).

Organizer or Coordinator (Israel)***Implementation Programs and Projects***

- **Principle Investigator.** “*Transition from tracked to heterogeneous teaching of mathematics in middle school*” (a joint project with Jason Cooper and Yariv Feniger). Funded by the Center for the Study of Pedagogy: Research-Practice Partnerships at the Ben Gurion University of Negev (\$85000 for 2024-2025).
- **Principal Investigator.** Personalized Teaching and Learning (PeTeL) – Mathematics. Funded by the Weizmann Institute of Science (\$58000 per year since 2021) and the Ministry of Education (\$7200 for 2022-2023), about 500 teachers participate in the project in 2024-2025.
- **Principal Investigator.** Raising the Bar in Mathematics Classrooms (RBMC). Funded by the Trump Foundation (\$650000), 2020-2024, about 400 teachers have participated in the project in 2020-2024.
- **Principal Investigator.** Teacher-Research Alliance for Investigating Learning (TRAIL). Funded by Weizmann Institute of Science (start-up grant of \$250000) and the Ministry of Education (\$45000), 2017-ongoing, about 80 mathematics teachers have participated in the project.
- **Principal Investigator.** The Weizmann Institute of Science’s professional development program for heads of middle-school mathematics departments, 2017-2021. Funded by the Trump Foundation (\$578000) and the Ministry of Education (\$55000), about 150 mathematics teachers have participated in the program.
- **Academic Coordinator.** The Technion professional development program for mathematics teachers who wish to teach mathematics at 5 and 5++ credit point level, 2015-2017. Funded by the Ministry of Education.
- **Academic Coordinator.** The Technion professional development program for mathematics teachers who wish to achieve ranks 7-9 as part of the reform "New horizons" (Ofek Hadash), 2012-2017. Funded by the Ministry of Education.
- **Academic Coordinator.** The program for retraining engineers into secondary school mathematics teachers, 2009-2010. Funded by the Ministry of Education.

Conferences, symposia, workshops

- Organizer (with Jason Cooper and Ronnie Karsenty, Weizmann Institute of Science) of an international workshop on sustainability of mathematics education implementation projects, Weizmann Institute of Science, March 16-18, 2026.
- Member of the program committee of the conference “Implementation and Replication Studies in Mathematics Education,” Mexico, November 2025.

- Chair of the program committee of the international workshop “MASER: Methodological Advances in Science Education Research”, Weizmann Institute of Science, September 2023.
- Member of the program committee of the conference “Studies between practice and research in education”, Ben Gurion University, October 2022.
- Organizer (with Talli Nachlieli, Anatoly Kuropatov, Levinsky College of Education, and Jason Cooper, Weizmann Institute of Science) of a series online international workshops on teaching mathematics in middle school, August-September 2020.
- Organizer (with Alon Pinto) of the Mathematics Education session at the *Annual Meeting of the Israel Mathematical Union*, Jerusalem, June 2019.
- Organizer (with Baruch Swartz, University of Jerusalem, and Michal Tabach, Tel Aviv University) of a symposium "Mathematical texts as a basis for a dialogue among the peers" at the *7th Jerusalem Conference on Research in Mathematics Education*. Jerusalem College of Technology, Jerusalem, 2019.
- Member of the program committee of the *ALUMA* conference of STEM education, Tel Aviv University, March 2018. The conference is jointly organized by the Ministry of Education and the leading Israeli universities.
- Organizer (with Alon Pinto, Weizmann Institute of Science) of a discussion group “Models of researcher-teacher partnerships in mathematics education: Where are we and where can we go from there?” at the *6th Jerusalem Conference on Research in Mathematics Education*. Jerusalem College of Technology, Jerusalem, February 2018.
- Organizer (with Einat Heyd-Metzuyanin, Technion) of a symposium “*Affect and Commognition in Mathematics Education*”, the Technion, 2017.
- Member of the PC of the *Fifth and Sixth Jerusalem Conferences on Research in Mathematics Education*. Jerusalem, 2016-2018.
- Organizer (with Baruch Swartz, University of Jerusalem, and Michal Tabach, Tel Aviv University) of a symposium “Collaborative learning and problem solving: An individual, a group, a teacher” at the *3rd Jerusalem Conference on Research in Mathematics Education*. Jerusalem College of Technology, Jerusalem, 2015.
- Organizer of a symposium “Successful practices of mathematical problem posing: The cases of prospective teachers, in-service teachers and experts” at the *2nd Jerusalem Conference on Research in Mathematics Education*. Jerusalem College of Technology, Jerusalem, 2014.
- Chair of the program committee of the *Israeli Conference of Ph.D. graduates in Mathematics, Science and Technology Education*, Technion, 2012.
- Coordinator of a panel at the third Technion workshop on qualitative research methods. Technion, 2011.
- Academic coordinator of the 9th Seminar of Doctoral Students in Mathematics,

Science and Technology Education. Nir Etzion, 2010.

- Organizer of a workshop on Ethnomathematics. Technion, 2009.
- Organizer (with Prof. Orit Hazzan and Dr. Yael Kali) of the 1st Technion workshop on qualitative research methods. Technion, 2009.
- Organizer of a workshop on Advanced Mathematical Thinking. Technion, 2007.

Consulting (Israel)

- Scientific consultant of the Ministry of Education team that prepares a new mathematics curriculum for middle school, 2025.
- Pedagogical consultant of a team that writes a series of mathematics textbooks for elementary school (SHVILIM), 2023-ongoing. Funded by CET – Center of Educational Technology.
- Scientific consultant of a team that wrote a calculus textbook for mathematics teachers, 2011-2012. Funded by the Ministry of Education.
- Academic consultant of the project “Excellence classes” at the Tech Aviation School, Haifa, 2010-2012.
- Academic consultant of the MOFET association, a network of classes for mathematically and scientifically promising students, 2006-2010.

Membership in editorial boards (Israel)

- *Alon LeMorej HaMatematika (Bulletin for Mathematics Teachers)* (2017-2021).

F: INTERNATIONAL RECOGNITION

Awards

- Outstanding Reviewer Award, *International Journal of Science and Mathematics Education* (Springer), 2019.
- Guastello Fellowship for Advancement of Teaching in Science and Technology in Universities for new faculty, SAKTA RASHI Foundation, Israel, 2006-2009.
- Sandor Szego Award for Excellence in Teaching, Technion, 2003.
- Miriam and Aaron Gutwirth Memorial Fellowship, Special Award, Technion, 2001.
- Guastello Fellowship for Advancement of Teaching in Science and Technology in Universities for doctoral students, SAKTA RASHI Foundation, Israel, 2001-2004.
- Outstanding Educator medal, Ukraine, 1998.
- Soros Foundation Award for High School Teachers, Ukraine, 1997.
- Mathematics Teacher of the Year, Ukraine, 1997.

- Mathematics Teacher of the Year, Lviv, Ukraine, 1994.

Membership in International Committees

International Program Committee of IRMEC (Implementation and Replication Studies in Mathematics Education Conference); Mexico City, Mexico, November 2025.

- International Program Committee of ICME-15 (15th International Congress of Mathematics Education); the Congress has been held in Sydney, Australia, in July 2024.
- Program Committee of PME-46 (46th Congress of the International Group for the Psychology of Mathematics Education), the Congress has been held in the University of Haifa, Israel, in July 2023.
- Representative of Israel at ICMI (International Commission on Mathematics Instruction), 2020-ongoing, appointed by the President of ICMI.
- European Mathematical Society (EMS) Committee for Education, 2014-2021, appointed by the President of EMS.
- International Committee of Mathematical Creativity and Giftedness (MCG), 2010-2015, elected.
- International Program Committee of the 7th Conference on Creativity in Mathematics and the Education of Gifted Students, Denver, USA, 2014.
- International Program Committee of the 6th Conference on Creativity in Mathematics and the Education of Gifted Students, Riga, Latvia, 2010.
- International Program Committee of the 2nd Conference "Gifted Children: Challenges and Possibilities", Riga, Latvia, 2009.
- International Program Committee of the 5th Conference on Creativity in Mathematics and the Education of Gifted Students, Haifa, Israel, 2008.

Chairing and Coordinating

- Co-chair (Linda Ahl from the Uppsala University, Sweden is a chair, and Mario Sánchez Aguilar from the National Polytechnic Institute, Mexico, and Julie Vangsøe Færch from Aarhus University, Denmark, are also co-chairs) of Topic Study Group 23 "Implementation of research findings in mathematics education" at the 14th Congress of European Society for Research in Mathematics Education (CERME-14), Bolzano, Italy, 2025.
- Chair of the panel "Winds of change in MASER" at the International Workshop *MASER: Methodological Advances in Science Education Research*, Weizmann Institute of Science, September 2023.
- Co-chair (Mario Sánchez Aguilar from the National Polytechnic Institute, Mexico is a chair, Morten Misfeldt from the University of Copenhagen, Denmark, and Linda Ahl from the Uppsala University, Sweden, are also co-chairs) of Topic Study Group 23 "Implementation of research findings in mathematics education" at the 13th Congress of European Society for Research in

Mathematics Education (CERME-13), Budapest, Hungary, 2023.

- Coordinator (with Jinfa Cai, University of Delaware, USA, Chunlian Jiang, University of Macau, China, Benjamin Rott, University of Cologne, Germany, and Rina Zazkis, Simon Fraser University) of a research forum “Mathematical Problem Posing: Task Variables, Processes, and Products” at the 45th *Conference of the International Group for the Psychology of Mathematics Education*, Alicante, Spain, 2022.
- Co-chair (Mario Sánchez Aguilar from the National Polytechnic Institute, Mexico is a chair; Morten Misfeldt from the University of Copenhagen, Denmark, and Linda Ahl from the Uppsala University, Sweden, are also co-chairs) of Topic Study Group 23 "Implementation of research findings in mathematics education" at the 12th *Congress of European Society for Research in Mathematics Education* (CERME-12), Bolzano, Italy, 2022.
- Chair of Working Group 46 “Mathematics competitions and other challenging activities” at the 14th *International Congress on Mathematical Education* (ICME-14), Shanghai, China, 2020³.
- Chair (with John Monaghan, University of Leeds, UK) of a discussion group "From more advanced data collection tools to more advanced understanding of problem solving" at the 37th *Conference of the International Group for the Psychology of Mathematics Education*, Kiel, Germany, 2013.
- Coordinator of the panel "Problem solving in mathematics and in mathematics education" at the International Symposium "*Mathematics and mathematics education: Toward the common ground*" in honor of Prof. Ted Eisenberg. Beer Sheva, Israel, 2012.
- Coordinator of the subsection "Advanced mathematical thinking" of the section "Common Trends in Mathematics Education Research in Poland and Israel" at the Israeli-Polish Mathematics Meeting. Lodz, Poland, 2011.
- Chair (with Agnis Andžāns, University of Latvia) of the symposium "Mathematical creativity and giftedness in out-of-school activities" at the 5th *International Conference on Creativity in Mathematics and the Education of Gifted Students*, Haifa, Israel, 2008.

Editorial positions (International)

- Guest editor of Special Issue of *Journal of Mathematical Behaviour (JMB)*, on variables in mathematical problem posing (2022-2024).
- Founding Editor (with Uffe Jankvist from the Aarhus University, Denmark, Mario Sánchez Aguilar from the National Polytechnic Institute, Mexico, and Morten Misfeldt from the University of Copenhagen, Denmark) and Associate Editor of *Implementation and Replication Studies in Mathematics Education* (IRME), 2020-ongoing.
- Associate Editor of *Journal of Mathematical Behavior (JMB)*, 2020-2026.

³ The conference has been postponed to 2021 due to the COVID-19 crisis.

- Guest Editor of Special Issue of *ZDM – Mathematics Education*, on implementation and implementability of mathematics education research (2019-2021).

Member of editorial boards

- Journal of Mathematical Behavior (2017-2020).
- International Journal of Science and Mathematics Education (2017-2022).
- Creative Education, 2011-2016.

Consulting (International)

- Advisor to a research project aiming at implementation of the TRAIL conceptual framework with Brazilian teachers. The project is led by Prof. Flavia Sueli Fabiani Marcatto from the Federal University of Itajubá, 2021-2023.
- Advisor to the Center for Advanced Research in Education (CIAE) of the University of Chile, 2017-2019, 2024. The Center is led by Prof. Patricio Felmer.
- Advisor to a B.Sc. Program in Computer Science of Ukrainian Catholic University, Lviv, Ukraine, 2015-2018. The program is led by Prof. Yaroslav Prytula.

Reviewer (since 2003)

- ***International Journals:***
Cognition and Instruction (C&I),
Journal of Research in Mathematics Education (JRME),
Educational Studies in Mathematics (ESM),
Journal of Mathematical Behavior (JMB),
Mathematical Thinking and Learning (MTL),
ZDM - Mathematics Education,
Educational Psychology (EP),
Studies in Educational Evaluation (SEE),
Journal of Mathematics Teachers Education (JMTE),
International Journal of Mathematics Education in Science and Technology (IJMEST),
International Journal of Science and Mathematics Education (IJSME),
Canadian Journal of Science, Mathematics and Technology Education (JSMTE),
Creative Education (CE).
- ***International Conferences:***
PME (Psychology of Mathematics Education),
ERME (European Society for Research in Mathematics Education),
MCG (Mathematical Creativity and Giftedness).

- ***Publishing Houses:***
MIT Press,
MOFET Press.
- ***Foundations and Public Institutions***
Israel Science Foundation,
The Chief Scientist Office of the Ministry of Education of Israel.

Membership in Professional Associations

- European Mathematical Society – EMS.
- European Society for Research in Mathematics Education – ERME.
- International Group for the Psychology of Mathematics Education – PME.
- International Research Association for Talent Development and Excellence – IRATDE.
- Israel Mathematical Union – IMU.

Talks at International Meetings

Plenaries, featured and invited talks at international conferences

- 2026 **Guest panelist** at the panel “How to conduct mathematics education research,” at the event integrating the 16th Symposium on Mathematics and Mathematics Education, the 15th International Congress on Computer-Assisted Mathematics, the 6th Symposium on Mathematics Competitions, and the 2nd Mathematics Festival (MEM 2026 Symposium) (the event is supported by 12 Colombian universities). Online. Title: “Conducting Mathematics Education Research Through Teacher–Researcher Partnerships: The TRAIL Approach.” UAN, Colombia.
- 2025 **Plenary workshop** at the Implementation and Replication Research in Mathematics Education Conference (IRMEC-1). Title: Introductions. CICATA IPN, Mexico City, Mexico.
- 2025 **Invited talk** at Mathematics Education Forum of the Fields Institute. Online. Title: “Flashes of mathematical creativity in choice-affluent learning situations.” University of Toronto, Canada.
- 2024 **Plenary talk** at the 47th Conference of the International Group for the Psychology of Mathematics Education. Title: “The secret life of mathematical problems through the lens of research-practice partnerships” Auckland, New Zealand.
- 2023 **Invited talk** at the international workshop “Mathematical curiosity as a means for the developing of mathematical proficiency in a wide range of students” (22-25.7.2023). Title: “*Curiosity-based problem posing*” University of Haifa, Israel.
- 2023 **Invited workshop (along with Michal Tabach)** at the Early Researcher Day of the 46th Conference of the International Group for the Psychology of Mathematics Education. Title: “*What counts for (un)friendly review?*” University of Haifa, Israel.

- 2022 **Invited talk** at the symposium of the international consortium iTEM: Innovative Teaching Education in Mathematics (June 29). Title: “*Publishing in the mathematics education research literature: What? Where? How?*” Hadassah Academic College, Jerusalem, Israel.
- 2021 **Invited talk** at the Seoul National University Mathematics Education Research Symposium (November 27). Online. Title: *Inquiry into aesthetic aspects of mathematical problem solving in instructional settings*.
- 2021 **Plenary talk** at the joint meeting of the Second International Seminar on Problem Solving, fifth Seminar on Problem Solving and the International Forum of Researchers in Problem Solving of Brazil (November 22). Online. Title: *Mathematical problem solving as designed, enacted and experienced*.
- 2021 **Invited talk** at the Seoul National University Webinar for Korean Mathematics Teachers (October 22). Title: *A secret life of mathematics problems: From designed to experienced*.
- 2021 **Invited lecture** at the international symposium “Problem posing for mathematically gifted children” (January 22). Title: *Problem posing in the context of teaching for advanced problem solving*. Online. The symposium is organized by Lukas Baumanns (Cologne), Karl Heuer (Berlin), Benjamin Rott (Cologne) & Deniz Sarikaya (Hamburg), in collaboration with the International Group for Mathematical Creativity and Giftedness.
- 2020 **Keynote speaker** at CADGME 2020 Online Gathering “Digital tools for Mathematics Education” (June 23). Title: *Mathematical creativity as a choice*.
- 2020 **Invited plenary reactor** to a plenary talk by Susanne Prediger on Theoretical Perspectives on Studying Mathematics Teacher Collaboration, at the ICME Study 25 Conference "Teachers of Mathematics Working and Learning in Collaborative Groups". **Lisbon, Portugal**.
- 2017 **Plenary speaker** at the 2017 KSME International Conference (December). Title: “*Developing mathematical habits of mind through problem solving in choice-affluent environments*”. Seoul National University, **Seoul, South Korea**.
- 2017 **Main speaker** at the 6th conference “Problem solving in Patagonia” (November). Title: “*On facilitating different types of problem-solving discourse: Focus on heuristics, connectivity and aesthetics*”. **Punta Arenas, Chile**.
- 2016 **Invited lecture** at the 13th International Congress on Mathematical Education (ICME-13) (July). Title: “*Mathematical problem solving in choice-affluent environments*”. **Hamburg, Germany**.
- 2016 **Featured talk** at the Rutgers University Mini-Symposium on Problem Solving, Affect, and Mathematics Education (April). Title: “*On heuristics and affect in individual vs. collaborative problem solving*”.
- 2015 **Plenary talk** at biannual conference of Greek Association for Research in Mathematics Education (**GARME-6**) (December). Title: “*Challenging mathematics for all and choice-based pedagogies*”. Aristotle University, **Thessaloniki, Greece**.
- 2015 **Invited talk** at the international conference “Didactics of Mathematics in Higher Education as a Scientific Discipline” (December). Title: “*Problem*”

solving opportunities in frontal classes: Inquiry in teaching practices and learning strategies". Schloss Herrenhausen, **Hanover, Germany**.

Based on joint work with Eman Atrash and Ofer Marmur.

- 2015 **Invited talk** at the 2nd International Conference "Lviv IT Arena" (October). Title: *IT in education: A view through the lenses of Diffusion of Innovation Theory*. Lviv IT Cluster, **Lviv, Ukraine**.
- 2015 **Invited talk** at the international conference "The open environment for worldwide mathematical education" (April). Title: *Formative assessment of learning mathematics through problem solving: Examples from Israel*". Moscow Center for Continuous Mathematical Education and the Moscow Center for Pedagogical Excellence. **Moscow, Russia**.
- 2014 **Invited talk** at the 2nd international conference "The pedagogy of doing and pedagogical education" (September). Title: *Development of habits of mind associated with mathematical problem solving*". Moscow State University and Voronezh Institute for Teacher Education, **Voronezh, Russia**.
- 2014 **Invited talk** at the international workshop "Beauty and Explanation in Mathematics" (WBEM) (March). Title: *Beauty appreciation and non-prototypical visualizations in problem solving*. University of Umeå, **Umeå, Sweden**.
- 2013 **Plenary panel presentation** at ICMI Study-22 Conference "Task design in mathematics education" (July). Title: *Variation theory as a research tool for identifying objects of learning in the design of tasks: Focus on methodological issues*". University of Oxford, **Oxford, UK**.
- 2012 **Plenary panel presentation** "Problem solving in mathematics and in mathematics education" for the international symposium "Mathematics and mathematics education: Toward the common ground" in honor of Prof. Ted Eisenberg (April). Title: *Problem solving and problem solving: Shall the twain meet?* **Beer Sheva, Israel**.
- 2008 **Featured talk** at the conference "Preparing the next generation of secondary mathematics teachers: How pedagogy emerges from learning mathematics" (May). Title: *What else can be taught through problem solving?* University of California, **San Diego, USA**.

Invited talks at sections of international conferences

- 2014 **Invited talk** at the section "Teaching with Mathematical Habits in Mind" of the joint conference of Israel Mathematical Union and American Mathematical Society (June). Title: *On developing habits of mind associated with mathematical problem solving: Lessons from three (relatively) long-term studies with middle-school students*". **Tel Aviv, Israel**.
- 2012 **Invited talk** at the "Linear Algebra Education" section of 2012 Haifa Matrix Theory Conference (November). Title: *Teaching Linear Algebra: Pedagogical Practices of Experienced Lecturers*". **Haifa, Israel**.
- Based on joint work with Eman Atrash.
- 2011 **Invited talk** at the section "Common Trends in Mathematics Education Research in Poland and Israel" of the Israeli-Polish Mathematics Meeting

(September). Title: “*Promoting conceptual understanding in large-size linear algebra classes through teaching that involves the use of Classroom Response Systems (clickers)*”. **Lodz, Poland.**

Based on joint work with Eman Atrash.

- 2010 **Invited talk** at the symposium “Linear Algebra Education” at the 16th Conference of the International Linear Algebra Society (June). Title: “*The use of Classroom Response Systems (“clickers”) in teaching linear algebra: Still more questions than answer*”. **Pisa, Italy.**

Based on joint work with Eman Atrash.

- 2009 **Invited talk** (with Igor Kontorovich) at the Working Group "Problem posing in mathematics learning: Establishing a theoretical base for learning" at the 33rd Conference of the International Group for the Psychology of Mathematics Education (July). Title: “*Three frameworks for understanding the complexity of mathematical problem posing*”. **Thessaloniki, Greece.**

- 2009 **Invited talk** at the research forum "Mathematical Gift and Promise: Exploring and Developing" at the 33rd Conference of the International Group for the Psychology of Mathematics Education (July). Title: “*What is so special about problem solving by mathematically gifted students?*” **Thessaloniki, Greece.**

- 2009 **Invited response** at the research forum "Mathematical Gift and Promise: Exploring and Developing" at the 33rd Conference of the International Group for the Psychology of Mathematics Education (July). Title: “*Educational equity and mathematical promise: Response to Erika Walker's presentation ‘(Un)Limited Opportunity: The Experiences of Mathematically Talented Black Students’*” **Thessaloniki, Greece.**

- 2009 **Invited talk** (with Avi Berman and Ludmila Schwartzman) at the Education Section of the 15th Haifa Matrix Theory Conference (May). Title: “*Understanding the concept of equivalence relations*”. Technion, **Haifa, Israel.**

- 2008 **Invited talk** at Topic Study Group 17 "Research and development in the teaching and learning of advanced mathematical topics" at the 11th International Congress of Mathematical Education (July). Title: “*Are more advanced problem-solving behaviors associated with more advanced mathematics?*” **Monterrey, Mexico.**

- 2007 **Invited talk** at the Mathematics Education Section of the 2nd International Conference "Initiatives for Promoting Learning in Higher Education" (May). Title: “*Discovery-oriented activities in calculus*”. Ort Braude College, **Karmiel, Israel.**

Other Presentations

*Conference presentations*⁴

⁴ This heading does not include presentations at international conferences that are published in refereed conference proceedings. These presentations are listed in a section VII of the List of Publications (see separate document).

- 2026 **Invited panel presentation** at the plenary panel “What passes editorial process? A glance at the next decade of mathematics education research.” The 14th Jerusalem Conference on Research in Mathematics Education (February). **Jerusalem, Israel.**
- 2026 **Contributed talk** (with Margarita Trifonov and Jason Cooper) at the 14th Jerusalem Conference on Research in Mathematics Education (February). Title: “Curiosity in mathematics lessons, what is it and how to promote it in real time?” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2025 **Contributed workshop** (with Margarita Trifonov and Jason Cooper) at the 13th Jerusalem Conference on Research in Mathematics Education (February). Title: “How can textbook questions evoke curiosity?” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2023 **Contributed talk** (with Rachel Zaks) at the conference “Passion and Professionalism in Teacher Education”. Title: “Adopting new classroom practices: The case of autonomous problem solving” The Mofet Institute, Tel Aviv.
- 2023 **Contributed talk** (with Rachel Zaks) at the 11th Jerusalem Conference on Research in Mathematics Education (February). Title: “*How can one approach it? Characterization of teachers’ anticipations of students’ solutions*” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2023 **Invited talk** at the conference devoted to celebration of the 80th birthday of Prof. Avi Berman. Title: “*Three encounters with problem solving*” University of Haifa, **Israel.**
- 2022 **Contributed talk** at the conference “Mathematical modelling: putting theory into practice”. Title: “*Modelling and proving: can they be combined, and if yes, then so what?*” Technion, **Israel.**
- 2022 **Contributed talk** at the symposium of the international consortium iTEM: Innovative Teaching Education in Mathematics (March). Title: “*Problem solving opportunities in frontal classes: Inquiry in teaching practices and learning strategies.*” University of La Laguna, **Tenerife, Spain.**
- 2022 **Contributed talk** (with Rachel Zaks) at the 10th Jerusalem Conference on Research in Mathematics Education (February). Title: “*Students’ independent problem solving in a high-school mathematics classroom: Attitudes and suggestions of teachers.*” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2021 **Contributed talk** (with B. Schwarz, E. Heyd-Metsuyanin, M. Tabach, & A. Yarden) at the 19th *Biennial EARLI (European Association for Research on Learning and Instruction) Conference*. Title: “Interdisciplinarity and school-learning in schools that comply with dialogic pedagogies.” (Online).

- 2021 **Contributed talk** (with M. Widder & M. Tabach at the *ECER-2021*, annual conference of European Educational Research Association. Title: “*Epistemic tensions as springboards to actions: Mathematics teachers’ enculturation in an inquiry-based professional development community.*” (Online).
- 2020 **Contributed talk** (with Menucha Farber) at the 8th Jerusalem Conference on Research in Mathematics Education (February). Title: “*Exploring ways of enhancing thinking flexibility in mathematical problem solving.*” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2019 **Invited workshop** (with Jason Cooper) at the meeting of the international consortium iTEM: Innovative Teaching Education in Mathematics. Title: “*Formative assessment in iTEM*” Aalborg University, **Copenhagen, Denmark.**
- 2019 **Invited panel presentation** at the international symposium in honor of Prof. Anna Sfard. Title: “*Commognizing with commognition.*” **University of Haifa, Haifa.**
- 2019 **Talk⁵** at the at the Mathematics Education Section of the Israel Mathematical Union Annual Conference (May). Title: “*Approaches to dealing with the secondary-tertiary transition: Examples from an international survey and discussion.*” **Neve Ilan, Israel.**
- 2019 **Talk** (Yarden, A., Schwarz, B. B., Koichu, B., Tabach, M., Heyd-Metzuyanin, E. & Slakmon, B.) at the 17th Conference of the European Association for Research in Learning and Instruction. Title: “*Challenges in the implementation of large-scale programs in teacher education for scaffolding argumentation, dialogue and reasoning in the classroom.*” Aachen.
- 2019 **Talk⁶** (with Michal Tabach) at the symposium on mathematical texts as a basis for dialogues among peers at the 7th Jerusalem Conference on Research in Mathematics Education (February). Title: “*Who is right? Theoretical analysis of representational activities.*” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2019 **Contributed talk** (with Rachel Zaks) at the 7th Jerusalem Conference on Research in Mathematics Education (February). Title: “*Roles of exercising in mathematics lessons.*” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2019 **Contributed talk** (with Nelly Keller and Zehavit Cohen) at the 7th Jerusalem Conference on Research in Mathematics Education (February). Title: “*Teachers solve challenging mathematical problems in online forums: An exploration of meta-cognitive processes.*” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2019 **Talk** at the conference "Science Teaching Department celebrates 50 year of activity" Title: "Let's go for TRAIL: Teacher-Researcher Alliance for Investigating Learning." Weizmann Institute of Science, **Rehovot, Israel.**

⁵ I was an organizer of the section with Alon Pinto.

⁶ I was an organizer of the symposium with Baruch Swartz and Michal Tabach.

- 2018 **Invited talk** at the symposium in honor of Dr. Buma Abramovitch.
Title: “*Inquiry in teaching practices and learning strategies in undergraduate mathematics education.*” ORT Braude College, **Karmiel, Israel.**
- 2018 **Contributed talk** (with Mirela Widder and Abraham Berman) at the 6th Jerusalem Conference on Research in Mathematics Education (February).
Title: “*Characterization of learning processes of 3-D geometry in a dynamic environment.*” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2017 **Plenary talk** at the conference of heads of middle-school mathematics departments and leading teachers (August). Title: “*Teaching in heterogeneous classes.*” **Beer Sheva, Israel.**
- 2017 **Talk** “Giftedness, challenge and choice”, at the seminar “Promoting excellence and leadership among teachers and students” organized by the Technion, Ministry of Education and Trump Foundation. Technion, March 2017.
- 2017 **Plenary talk** at the conference of coordinators of mathematics study in elementary schools (August). Title: “*Pedagogical creativity and the wisdom of crowd.*” **Raanana, Israel.**
- 2017 **Invited panel presentation** at the Mathematics Education Section of the Israel Mathematical Union Annual Conference (May). Title of the panel: “*Lost in Translation: What can we learn from research on university mathematics education?*” **Akko, Israel.**
- 2017 **Contributed talk** (with Ofer Marmur) at the 5th Jerusalem Conference on Research in Mathematics Education (February). Title: “*What can calculus students like and learn from a solution to a challenging problem that they don’t understand?*” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2017 **Contributed talk** (with Alik Palatnik) at the 5th Jerusalem Conference on Research in Mathematics Education (February). Title: “*Sense making by means of algebraic activities.*” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2017 **Contributed talk** (with Nelly Keller) at the 5th Jerusalem Conference on Research in Mathematics Education (February). Title: “*Interactions between learning communities in development: A case of a research project focusing on fostering mathematical problem solving in online forums.*” Jerusalem College of Technology, **Jerusalem, Israel.**
- 2016 **Contributed talk** (with Nelly Keller) at the 4th Jerusalem Conference on Research in Mathematics Education (February). Title: “*Integration of classroom and on-line learning environments in mathematics study*”. Jerusalem College of Technology, **Jerusalem, Israel.**

- 2015 **Invited talk** at the workshop “Students, teachers and social networks: Can they be together?” (May). Title: “*On multi-stage processes of integrating an online environment and a classroom environment for studying mathematics.*” Tel Aviv University, **Tel Aviv, Israel**.
Based on joint work with Nelly Keller.
- 2015 **Invited workshop** at the 2nd Israeli Conference for Learning Sciences (February). Title: “*Behind the scene: What can we learn about problem-solving processes from analyzing students’ drafts?*” Hebrew University of Jerusalem, **Jerusalem, Israel**.
- 2015 **Plenary talk** at the 3rd Jerusalem Conference on Research in Mathematics Education (February). Title: “*Where do solutions to mathematical problem come from?*” Jerusalem College of Technology, **Jerusalem, Israel**.
- 2015 **Talk**⁷ at the symposium on collaborative learning and problem solving at the 3rd Jerusalem Conference on Research in Mathematics Education (February). Title: “*Collaborative learning and problem solving: Focus on an individual in a group.*” Jerusalem College of Technology, **Jerusalem, Israel**.
- 2014 **Invited talk** (with Royi Lachmy) at the workshop “Social networks in service of teaching and learning” (June). Title: “*Expanding the classroom boundaries: A pilot study on the use of social networks for enhancing collaborative solving challenging mathematical problems.*” Hebrew University of Jerusalem, **Jerusalem, Israel**.
- 2014 **Talk**⁸ at the symposium “Successful practices of mathematical problem posing: The cases of prospective teachers, in-service teachers and experts” at the 2nd Jerusalem Conference on Research in Mathematics Education (February). Title: “*Dissecting a successful problem posing practice by prospective mathematics teachers.*” Jerusalem College of Technology, **Jerusalem, Israel**.
- 2014 A lecture on cognitive and affective aspects of problem solving at a workshop for mathematics teacher educators. CET – The Center for Educational Technology, Tel Aviv.
- 2013 **Plenary talk** at the conference of elementary school mathematics teachers who teach in Arab sector (June). Title: “*The use of problem solving as an activity enhancing understanding.*” **Taibe, Israel**.
- 2013 A lecture on developing aesthetic appreciation of geometry at Israeli conference for elementary school mathematics teachers “Geometry from different perspectives”, Shfaim.
- 2013 **Invited talk** at the 1st Jerusalem Conference on Research in Mathematics Education (February). Title: “*Iterative unpacking of problem solving and problem posing.*” Jerusalem College of Technology, **Jerusalem, Israel**.

⁷ I was an organizer of the symposium along with Baruch Swartz and Michal Tabach.

⁸ I was an organizer of the symposium.

- 2012 **Plenary talk** at the conference of coordinators of mathematics study of Haifa district schools (November). Title: “The use of problem solving as an activity enhancing understanding.” Tirat Carmel, Israel.
- 2012 **Invited talk** at the 4th Technion workshop on qualitative research methods (June). Title: “*May we generalize from case studies anyway?*” Technion, **Haifa, Israel.**
- 2010 **Invited talk** at the workshop “Learning from different perspectives” (December). Title: “*An operational definition of learning.*” Technion, **Haifa, Israel.**
- 2010 **Invited talk** (with Avi Berman and Roza Leikin) at the annual Conference of the Israeli Association of Research on and Promotion of Giftedness and Excellence (November). Title: “*Mathematical giftedness as a quality of problem-solving acts.*” Technion, **Haifa, Israel.**
- 2010 **Invited talk** at the 4th Conference "Initiatives for Promoting Learning in Higher Education" (May). Title: “*Small change, big difference: How can we improve calculus students’ habits of learning and grades?*” ORT Braude College, **Karmiel, Israel.**
- Based on joint work with Ludmila Shvartsmann, Buma Abramovitz and Miriam Berezina.
- 2010 **Plenary talk** at the conference of elementary school mathematics teachers organized by the Ministry of Education (April). Title: “*Ways of thinking in mathematical problem solving.*” **Haifa, Israel.**
- 2010 **Invited talk** at the workshop "Between proof and explanation" (January). Title: “*Pre-service teachers as researchers on proofs.*” Technion, **Haifa, Israel.**
- 2009 **Invited talk** at the conference "Mathematical Competitions" (November). Title: “*Math competitions: Milestones and trends.*” Ariel University Center of Judea and Samaria, **Ariel, Israel.**
- Based on joint work with Agnis Andžāns.
- 2009 **Plenary talk** at the conference of the project “Mitsui & Mitsuyanut in Mathematics” (A program for promoting excellence and advancing the potential in mathematics of high (and low) achieving students funded by the Ministry of Education) (June). Title: “*On the nature of mathematical giftedness.*” **Haifa, Israel.**
- 2009 **Plenary talk** at the conference devoted to publication of the books by Anna Sfard and James Kinard & Alex Kozulin (March). Title: “*Attempting to promote transfer of learning in mathematically disadvantaged students.*” Achva College of Education, **Arugot, Israel.**
- 2008 A lecture on psychology of mathematical problem solving at the workshop organized by the Ministry of Education for secondary school teachers working at the settlement education. Hertzlia, 2008.

- 2007 **Invited talk** at the meeting of the Israeli Association for Giftedness (February). Title: *“Developing heuristic literacy in middle-school mathematical classroom or what can an average student learn from mathematically gifted classmates?”* Gordon College of Education, **Haifa, Israel.**
- 2007 **Talk⁹** at the workshop "Advanced Mathematical Thinking" (October). Title: *“On the role of the Principle of Parsimony in advanced mathematical thinking.”* Technion, **Haifa, Israel.**
- 2007 **Invited talk** at the workshop "The Learning Brain: What neuroscience can tell us about science education?" (June). Title: *“Research questions from science education researchers to neuroscientists.”* Technion, **Haifa, Israel.**
- 2006 **Invited talk** at the workshop “Excellency and Giftedness” (June). Title: *“Seizing opportunities to learn how gifted students solve challenging problem.”* Faculty of Education in Science and Technology, Technion, **Haifa, Israel.**
- 2006 **Invited talk** at the Mathematics Education section of the Israel Mathematical Union Annual Conference (May). Title: *“When do gifted high-school students use geometry to solve geometry problems?”* **Neve Ilan, Israel.**
- 2005 **Contributed talk** at the 8th Conference of SIGMAA on RUME (Special Interest Group of MAA on Research in Undergraduate Mathematics Education) (February). Title: *“Heuristic literacy and mathematical reasoning: The nature of relationship.”* **Phoenix, Arizona, USA.**
- 2005 **Contributed talk** at the 8th Conference of SIGMAA on RUME (Special Interest Group of MAA on Research in Undergraduate Mathematics Education) (February). Title: *“Thinking-aloud dilemma in semi-structured interviews.”* **Phoenix, Arizona, USA.**
- 2003 **Invited talk** on teaching mathematical problem solving for engineers of *Raphael*. Raphael Advanced Defense Systems, Haifa.
- 2001 **Invited talk** at Mathematics Education section of the Israel Mathematical Union Annual Conference (June). Title: *“Teaching heuristic strategies: A pilot study.”* University of Haifa, **Haifa, Israel.**
- 2000 **Invited talk** at Mathematics Education section of the Israel Mathematical Union Annual Conference (May). Title: *“Loans and Rabbits: Changes in classical models.”* Technion, **Haifa, Israel.**

Invited talks at university seminars and colloquia

- 2026 Invited talk at Texas State University's Mathematics Education Seminar (April). Title: TBD.

⁹ I was an organizer of the workshop.

- 2025 Invited talk at the research seminar of Teacher Education Group of the Södertörn University, Sweden (November). Title: *“The secret life of mathematical problems through the lens of research-practice partnerships”*. Presented online.
- 2025 Invited talk at the meeting of Mathematics Education Group of the **University of Hiroshima**, Japan (May). Title: *“The secret life of mathematical problems: from intended to experienced”*
- 2025 Invited talk at the seminar of Mathematics Education Forum of the **Waseda University**, Japan (May) Title: *“Flashes of mathematical creativity and curiosity in inquiry-based learning”*
- 2024 Talk at the meeting of Mathematics Education Group of the **University of Auckland** (July). Title: *“How can we generalize from case studies?”*
- 2024 Talk at a seminar of **Oxford's Subject Pedagogy Research Group** (May). Title: *“Curiosity-based problem solving and problem posing”*
- 2022 Talk at the seminar of Mathematics Group of the Department of Science Teaching of the Weizmann Institute of Science (February). Title: *“Thoughts about implementation research and implementation of research in mathematics education.”*
- 2021 Talk at the seminar of Mathematics Group of the Department of Science Teaching of the Weizmann Institute of Science (January). Title: *“Mathematical encounters of the third time”* (with Rina Zazkis).
- 2020 Talk at the seminar of Mathematics Group of the Department of Science Teaching of the Weizmann Institute of Science (March). Title: *“TRAIL –two years from the beginning: Research and agenda for the future.”*
- 2019 Talk at the Department of Science Education of the **University of Copenhagen** (October). Title: *“A discursively-oriented conceptualization of mathematical problem solving and its implications.”*
- 2019 Talk at the Department of Mathematics of the **University of Budapest**. Budapest (May). Title: *“On facilitating different types of problem-solving discourse.”*
- 2017 Colloquium of the Department of Science Teaching of the Weizmann Institute of Science, Israel (February). Title: *“Mathematical problem solving in choice-affluent environments.”*
- 2016 Seminar at the School of Mathematical and Statistical Science, **Arizona State University**, USA (April). Title: *“Towards a confluence model of mathematical problem solving in instructional settings.”*
- 2016 Colloquium of the Graduate School of Education, **University of California, Berkeley**, USA (April). Title: *“Where can solution ideas come from? Towards a confluence model of mathematical problem solving in instructional settings.”*

- 2015 Colloquium of the Department of Science Teaching of the Weizmann Institute of Science, Israel (April). Title: “*Mathematical problem solving in instructional settings.*”
- 2014 Forum for Qualitative Research of the Faculty of Social Sciences, Bar-Ilan University, Israel (December). Title: “*May we generalize from case studies anyway?*”
- 2014 Seminar of the Faculty of Pedagogical Education, **Moscow State University**, Russian Federation (September). Title: “*On tasks in mathematics teacher education: From practice to theory and back.*”
- 2013 Meeting of mathematics education faculty and graduate students of the Faculty of Education of **Simon Fraser University**, Burnaby, Canada (October). Title: “*Teaching for aesthetic appreciation of mathematical problem solving.*”
- 2009 Colloquium of the Department of Science Teaching of the Weizmann Institute of Science, Israel (February). Title: “*What exactly is advanced in "advanced mathematical thinking?"*”
- 2008 Seminar of the Center for STEM Excellence, **California State University at Sacramento**, USA (May). Title: “*What is a beautiful problem? A students' perspective.*”
- 2007 Seminar of the Department of Science Education at Tel-Aviv University, Israel (May). Title: “*Thinking-aloud dilemma: Issues in analysis of individual problem-solving discourse.*”
- 2007 Seminar “Think of mathematics” at the University of Haifa, Israel (March). Title: “*Thinking-aloud dilemma: Issues in analysis of individual problem-solving discourse.*”
- 2007 Seminar of the Department of Science Education at Hebrew University of Jerusalem, Israel (January). Title: “*An operational definition of 'learning' and its illustration from the 18-month long interview study.*”
- 2006 Seminar of the DNR research group, **University of California, San Diego**, USA (January). Title: “*Recognizing and characterizing learning.*”
- 2004 Seminar of the Center for Research in Mathematics and Science Education, **San Diego State University**, USA (September). Title: “*Thinking-aloud dilemma: What and how can we learn from the semi-structured problem-solving interviews?*”
- 2003 Meeting of the *Group of Mathematics Education* of the Department of Science Teaching, Weizmann Institute of Science, Israel (November). Title: “*Junior high school students' heuristic behaviors in problem solving.*”
- 2003 Seminar of the *National Center for Junior High School Teachers of Mathematics*, Weizmann Institute of Science, Israel (April). Title: “*Promoting heuristic literacy in junior high school mathematics classroom.*”

G: SCIENTIFIC PRODUCTIVITY

Competitive Research Grants

- 2025-2026 **Principal Investigator, Israel Science Foundation**, for the international workshop on sustainability of mathematics education implementation projects. (a joint study with Jason Cooper and Ronnie Karsenty), \$19500.
- 2021-2026 **Principal Investigator, Israel Science Foundation**, for the study "*From design to implementation: Exploring intended, planned, enacted and experienced mathematical problem solving in middle school*" (a joint study with Jason Cooper who is also a PI and Mirela Widder who is an academic coordinator), \$202000.
- 2018-2022 **Principal Investigator of a "Quality plan" work-package, Erasmus+**, in the international consortium "Innovative Teaching Education in Mathematics" of 17 European universities and institutions. (The consortium is coordinated by Prof. Konstantinos Petridis, Technological Educational Institution of Crete. It is a joint project with Alon Pinto and Ronnie Karsenty who are also PIs of the "Quality plan" work-package), 78,000 Euro.
- 2017-2023 **Principal Investigator, Israel Science Foundation**, for the study "*Collective reasoning around texts across disciplines towards deliberative democracy*", \$1,000,000 (a joint project with Anat Yarden, Michal Tabach and Einat Heyd Metzuyanin, who are also PIs and with Baruch Schwarz, who is a PI and the project coordinator).
- 2013-2017 **Principal Investigator, Israel Science Foundation**, for the study "*Heuristic and engagement aspects of learning through long-term collaborative mathematical problem solving and problem posing*", \$107000.
- 2012 **Principal Investigator, Israel Science Foundation**, for the international workshop "*Exploring mathematical thinking and giftedness of high achievers who learn mathematics in different types of classes*", \$16000 (a joint project with Roza Leikin, who was also a PI, and Avi Berman, who was a CI).
- 2007-2011 **Principal Investigator, Israel Science Foundation**, for the study "*Exploring mathematical thinking and giftedness of high achievers who learn mathematics in different types of classes*", \$100500 (a joint research with Roza Leikin, who was also a PI, and Avi Berman, who was a CI).

Other research grants

- 2023-2025 **Principal Investigator**, inter-university collaboration with the Research-Practice Center of the Ben-Gurion University of Negev and the Branko Weiss Institute, for the study "Moving from tracked to heterogeneous teaching of mathematics in middle school", \$85000 (joint research with Yariv Feniger).

- 2008-2009 **Principal Investigator**, Association MOFET, for the study "*Exploration of professional development of high school MOFET teachers of mathematics: a follow-up study*", \$6000.
- 2006-2007 **Principal Investigator**, Association MOFET, for the study "*Exploration of professional development of high school MOFET teachers of mathematics*", \$5100.
- 2000-2001 **Principal Investigator**, Ort Israel, for the study "*Evaluation of mathematics education in MOFET classes*", \$20000.

Students and Postdoctoral Fellows

Ph.D. theses – in progress

- Reut Frenkel: Mathematics teachers' perceptions of time as a factor that affect their preferences for student-centered vs. teacher-centered instruction, The research proposal is to be submitted in August 2026. Estimated completion: 2029.
- Margarita Trifonov: *Curiosity-based problem solving in middle school* (tentative title) (with Jason Cooper as a co-advisor). The intermediate report is to be submitted in February 2025. Estimated completion: 2027.
- Menucha Farber: *Problem-solving implementation chains* (tentative title). The research proposal was approved in 2022. Estimated completion: 2026.

Ph.D. theses – completed

- Reut Parasha: *Mathematics teachers as facilitators of productive dialogue: designing dialogic situations, resulting dialogue patterns, and pathways of professional development*. Ph.D. thesis is completed in 2024. Current activities: a postdoctoral fellow at the Weizmann Institute of Science.
- Rachel Zaks: *Creating opportunities for problem solving in mathematics classes as a teaching practice related to anticipating students' solutions*. Ph.D. thesis is completed in 2023. Current activities: a lecturer at "Shaanan" Academic Religious Teachers' College, Jerusalem.
- Nelly Keller (with Dr. Zehavit Kohen, the Technion, as a primary advisor): *Mathematics teachers as self-regulated learners and mentors in online problem-solving forums*. Ph.D. thesis is completed in 2023. Current activities: a lecturer at "Shaanan" Academic Religious Teachers' College, Haifa.
- **Ofer Marmur**: Undergraduate student learning during calculus tutorials: Key memorable events. Ph.D. thesis is completed in 2017. Current activities: **Senior Lecturer (with tenure) at the University of Auckland, New Zealand.**
- Royi Lachmy: *Developing and using productive mathematical ideas in online collaborative problem solving*. Ph.D. thesis is completed in 2016. Current activities: Postdoctoral fellow at the Hebrew University of Jerusalem.

- Michal Klinshtern: “*Mathematics teachers as composer of problems and designer of their lessons*” (with Prof. Abraham Berman as a primary advisor). Ph.D. thesis is completed in 2016. Current activities: Adjunct Lecturer at the Technion and Lecturer at the Emek Israel College.
- **Alik Palatnik**: “*Middle-school students’ learning through long-term mathematical research projects*” Ph.D. thesis is completed in 2016. Current activities: **Lecturer (tenure track) at the Hebrew University of Jerusalem.**
- Mirela Widder: “*Exploration of the use of computerized images in teaching geometry in space*” (with Prof. Abraham Berman as a primary advisor). Ph.D. thesis is completed in 2016. Current activities: a lecturer at "Shaanan" Academic Religious Teachers' College, Haifa, and an academic advisor at the Department of Science Teaching of the Weizmann Institute of Science.
- Tikva Ovadia: “*Learning mathematical problem-solving strategies and their implication in solving similar problems: The case of ‘weak’ high school female students*”. Ph.D. thesis is completed in 2014. Current activities: Lecturer at the Oranim College of Education.
- Eman Atrash: “*Teaching Linear Algebra: Pedagogical Practices of Experienced Lecturers*”. Ph.D. thesis is completed in 2014. Current activities: a high school teacher.
- **Igor’ Kontorovich**: “*How do experts compose problems for mathematics competitions?*” Ph.D. thesis is completed in 2013. Current activities: **Associate Professor (with tenure) at the University of Auckland, New Zealand.**
- Ruti Segal: “*Characterization of the knowledge of mathematics teachers’ teachers*” (with Prof. Orit Zaslavsky as a co-advisor). Ph.D. thesis is completed in 2013. Current activities: Lecturer at "Shaanan" Academic Religious Teachers' College, Haifa.
- Ira Raveh: “*Promoting mathematical knowledge of teachers through creating connections between standard arithmetic algorithms and underlying mathematical principles*” (with Prof. Orit Zaslavsky and Dr. Irit Peled as co-advisors). Ph.D. thesis is completed in 2012. Current activities: Lecturer at Ort Braude College and Oranim College of Education.
- Lea Dolev: “*Considerations in the design of learning tasks for teachers: The case of classification of mathematical items*” (with Prof. Orit Zaslavsky as a co-advisor). Ph.D. thesis is completed in 2012. Current activities: academic advisor to the Trump Foundation.
- Yaniv Biton: “*Incorporating peer assessment in pre-academic mathematics study*”. Ph.D. thesis is completed in 2011. Current activities: Head of the Mathematics Department at the Center of Educational Technology, Tel Aviv.

- Efim Katz: *Teaching and learning aesthetical aspects of mathematical problem solving* (with Prof. Avi Berman as a co-advisor). Ph.D. thesis is completed in 2011. Current activities: Retired from the position of the Head of Mathematics Education Department at the Lewinski College of Education, Tel Aviv.

M.Sc. theses – completed

- Michal Elran: *Teacher Learning and Professional Growth Through Engagement with PeTeL-M*. M.Sc. thesis is completed in 2026. Current activities: an academic advisor at the Department of Science Teaching
 - Reut Parasha: *Mathematics teachers as learners, designers, and facilitators of dialogic tasks*. Entitled to her M.Sc. degree in 2021 based on her Doctoral Candidacy Exam, within the direct track to Ph.D. Current activities: a Ph.D. student.
 - Menucha Farber: “*Designing teaching situations aimed at fostering mathematical flexibility within the collaboration of researchers and teachers.*” M.Sc. thesis is completed in 2021. Current activities: a Ph.D. student.
 - Nelly Keller: “*A choice-affluent environment that integrates classroom and online learning spaces.*” M.Sc. thesis is completed in 2017. Current activities: Ph.D. student at the Technion, a high-school teacher and a teacher-mentor.
- Alva Harris: “*Teaching practices of novice mathematics teachers as a reflection of their perceptions about what a good lesson is*”. M.Sc. thesis is completed in 2015. Current activities: High-school teacher.
- Ofer Marmur: “*Evoking awareness of mathematical beauty and aesthetics in undergraduate students*”. Entitled to his M.Sc. degree in 2015 based on his Doctoral Candidacy Exam in the direct track of studies, from B.Sc. to Ph.D. Current activities: Lecturer (tenure track) at the University of Auckland, New Zealand.
 - Yulia Elkin: “*Learning mathematical principles through problem solving by high achieving middle school students*”. M.Sc. thesis is completed in 2013. Current activities: High-school teacher in the Hebrew Reali school, Haifa.
 - Igor’ Kontorovich: “*Exploring the processes of mathematical problem posing in small groups: A case of secondary school high achievers*”. Entitled to his M.Sc. degree in 2010 based on his Doctoral Candidacy Exam in the direct track of studies, from B.Sc. to Ph.D. Current activities: Senior Lecturer (with tenure) at the University of Auckland, New Zealand.
 - Eman Atrash: “*Pedagogical development of linear algebra lecturers through teaching with Classroom Response Systems*”. Entitled to her M.Sc. degree in 2009 based on her Doctoral Candidacy Exam in the direct track of studies, from B.Sc. to Ph.D. Current activities: a high-school teacher.

- Yaniv Biton: “*Evaluation aspects of learning mathematics at the center for pre-university education at the Technion*”. Entitled to his M.Sc. degree in 2008 based on his Doctoral Candidacy Exam, within a direct track of studies, from B.Sc. to Ph.D. Current activities: Head of Mathematics Department at the Center of Educational Technology, Tel Aviv.

Postdoctoral fellows

- Edgar Sintema: *Enhancing students’ mathematical problem-solving competences using novel strategies for implementation of mathematical problem-solving models*, 2023-2025.
(Dr. Sintema is a recipient of the IASH & CHE Excellence Fellowship for Postdoctoral Research¹⁰).
- Merav Weingarden: *Exploring middle-school mathematics teachers' shift from tracked to heterogeneous teaching*, 2023-2024. Current activities: Lecturer (tenure track) at Tel Aviv University.
- Hadas Levi-Gamlieli: *Secondary-tertiary transition*, iTEM – innovative Teacher Education in Mathematics (joint supervision with Dr. Alon Pinto), 2019-2021. Current activities: Lecturer in Shenkar College, Ramat Gan.
- Alon Levi: *Exploring mathematical thinking of high achievers who learn mathematics in different types of classe*”, 2009-2011. Current activities: Principal of the “Kineret” Enrichment Center for gifted school students.

Ongoing International Collaborations

- With Uffe Jankvist from the Aarhus University in Denmark, Mario Sánchez Aguilar from the Instituto Politécnico Nacional in Mexico and Morten Misfeldt from the University of Copenhagen, Denmark. Topic: Editing *Implementation and Replication Studies in Mathematics Education* (Brill).
- With Tuğrul Kar from Tayyip Erdoğan University, Turkey, on research on mathematical problem posing.

H: PATENTS

Patents – none.

Start-ups, involvement with companies:

Designer of learning aids for secondary school, 1994-1998:

- *A set of templates "Functor", for drawings graphs of 32 functions included in junior-high and high school curricula in Ukraine.*
- *A kit “Dynamic 3-D models”, for constructing dynamic models of 3-D solids, which are studied in high school in Ukraine.*

A company “Contact Ltd.” was established for manufacturing these aids (1994-1998). The aids were recommended by the Ministry of Education of Ukraine for the use in secondary school.

I: LANGUAGES

¹⁰ IASH & CHE stands for the Israel Academy of Science and Humanities & the Council for Higher Education.

- Hebrew – fluent in speaking, reading and writing.
- English – fluent in speaking, reading and writing.
- Russian – mother tongue.
- Ukrainian - fluent in speaking, reading and writing.