
Marina Umaschi Bers

Marina.Bers.@bc.edu

August Long Professor of Education
Lynch School of Education and Human Development Boston College

<https://www.marinabers.com/>

Research Interests

- The impact of innovative learning technologies for fostering positive youth development.
 - The design, study, and implementation of developmentally appropriate programming languages and robotic systems for early childhood education and their associated curricular and teaching materials, assessment instruments and professional development strategies.
 - The role of computational thinking and coding as a literacy of the 21st century in early childhood education
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Education

Massachusetts Institute of Technology – Media Laboratory Ph.D. in Media Arts and Sciences M.S. in Media Arts and Sciences	1995 – 2001
Boston University – School of Education M.Ed. in Educational Technology	1994 – 1995
University of Buenos Aires – School of Social Communication B.A. in Communication Sciences	1989 – 1993
TEA School of Journalism – Buenos Aires, Argentina Journalist	1990 – 1992
Hebrew University of Jerusalem Special program	1988 – 1989

Languages

Spanish (native), English, French, Hebrew

Research Experience

Boston College, Chestnut Hill, MA Augustus Long Professor of Education, Lynch School of Education Secondary appointment, Department of	2022 - Present
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Computer Science Affiliated faculty, Schiller Institute for
Science and Society Director, DevTech research group

Tufts University, Medford, MA

Professor, Eliot-Pearson Department of Child Development	2013 – 2022
Chair, Eliot-Pearson Department of Child Development	2018 – 2021
Director, Early Childhood Technology Graduate Certificate Program	2015 – 2022
Director, DevTech Research Group	2001 – Present
Secondary Appointment, Department of Computer Science	2005 – 2022
Fellow, Center for Educational Engineering Outreach	2015 – 2022
Director, Master of Arts Program	2011 – 2014
Associate Professor, Eliot-Pearson Department of Child Development	2001 – 2012
Adjunct Professor, Tisch College of Public Service	2007 – Present

Boston Children’s Hospital	Boston, MA
Associate Scientific Staff, Department of Psychiatry	2005 – 2011

MIT Media Laboratory	Cambridge, MA
Research Assistant, Epistemology and Learning Group	1997 – 2001
Head: Seymour Papert	
Research Assistant, Gesture and Narrative Language Group	1995 – 1997
Head: Justine Cassell	

MERL Mitsubishi Electric Research Lab	Cambridge, MA
Research Internship	Summer 1997

Interval Research Corporation	Palo Alto, CA
Research Fellowship	Summer 1996

Teaching Experience

Boston College,	Chestnut Hill, MA
Professor, Lynch School of Education	2022-Present

Tufts University	Medford, MA
Professor, Eliot-Pearson Dept. of Child Development	2013 – Present
Chair, Eliot-Pearson Dept. of Child Study and Human Development	2018 – 2020
Secondary Appointment, Department of Computer Science	2005 – Present
Associate Professor, Eliot-Pearson Dept. of Child Development	2001 – 2012

MIT Media Laboratory	
Teaching Assistant, Prof. Mitchel Resnick & Sherry Turkle	9/1997 – 5/2000

Instructor, IAP Program	1/1996 – 1/1998
Buenos Aires University – Communication Sciences Department Teaching Assistant, Prof. Alejandro Piscitelli & Anibal Ford	3/1992 – 8/1994
La Plata National University – School of Journalism Lecturer	Spring 1993
Systemic Psychology Graduate Institute Instructor	Spring 1993
Anthropology National Graduate Institute Lecturer	Fall 1993

Related Work Experience

KinderLab Robotics, Inc. Co-Founder and Chief Scientist	2013 – Present
Wombats - PBS Series Content director for PBS animation series that will broadcast nationally starting in 2023 focused on computational thinking for preschoolers	2020 - Present
The Development of Computational Literacy Through the Integration of Computational Thinking and Early Language and Literacy Development in Urban Preschools Advisor for WGBH project teaching computational thinking, aligned with literacy, to young children	2019 - Present
Monkeying Around with Computational Thinking – WGBH and PBS Content director for WGBH show aimed at teaching computational thinking to young children	2016 - 2018
Instructional Materials Center – Boston University Wheelock College of Education and Boston University Helped faculty, students, and teachers design educational applications and develop computer skills	8/1994 - 8/1995
Uno Mismo Monthly Magazine – Buenos Aires, Argentina Junior Editor with a focus on technology, culture and society	8/1994 – 8/1995
Freelance Journalist Specializing in Science, Technology and Society Published articles in magazines (PC Users, Virus Report) and newspapers (Clarín, Pagina 12)	1/1990 – 12/1998
Ciba-Geigy Laboratory – Buenos Aires, Argentina Fellowship at the press department with a focus on science education	1/1991 – 7/1991
Santillana Publisher – Buenos Aires, Argentina	3/1990 - 10/1990

Designed and produced content for social sciences elementary school textbooks
National Radio Splendid – Buenos Aires, Argentina 3/1989 – 10/1989
Creation of scripts (based on historical biographies) to broadcast as educational soap operas

Fellowship and Honors

National Academy of Education <i>Member</i>	2023
American Educational Research Association <i>Fellow</i>	2022
<i>Outstanding Faculty Contribution to Graduate Student Studies</i> , Tufts University	2016
<i>Women-to-Watch in Technology Award</i> , Boston Business Journal	2015
<i>Presidential Early Career Award for Scientists and Engineers (PECASE)</i> , White House, Office of Science and Technology	07/2006
<i>Premio Sadosky. Cámara de Empresas de Software y Servicios Informáticos (CESSI)</i> , Argentina, <i>Mencion Especial</i>	07/2006
<i>Bernstein Award for Junior Faculty</i> , Tufts University	2005 – 2007
<i>Schuster Faculty Development Program Award</i> , Tufts University	02/2005
<i>Jan Hawkins Award for Early Career Contributions to Humanistic Research and Scholarship in Learning Technologies</i> , American Educational Research Association	04/2005
<i>Young Faculty Leaders Forum Fellowship</i> , Harvard University	2002 – 2006
<i>Tisch College Faculty Fellowship</i> , Tufts University	2004 – 2006

Awarded Grants

NSF DRL (PI Marina Bers, Co-PI Andres Bustamante, Chris Rogers) *Collaborative Research: The Smart Playground: Computational Thinking through Robotics in Early Childhood* (2023 – 2027) Awarded: \$1,599,724

LEGO Foundation (PI Marina Bers) *Playful-Engineering Based Learning* Awarded: \$100,000

US Department of Education (PI Marina Bers) *Coding as Another Language: The Development and Implementation of a Computational Thinking Curriculum and Sustainable Professional Development Model in K-2* (2019-2023) Awarded: \$3,854,405.09

Templeton World Charity Foundation (PI Marina Bers) *Beyond STEM: The development of virtues in early childhood education through robotics* (2019-2020) Awarded: \$ 233,428

Siegel Family Endowment (PI Marina Bers) *The Coding Brain: understanding the cognitive mechanisms underlying coding with ScratchJr* (2018-2024) Awarded: \$350,000

VEX Robotics Foundation (PI Marina Bers) *VEX Robotics Program: Gender Differences in Attitudes, Engagement and Performance* (2017-2020) Awarded: \$135,000

NSF EAGER (PI Marina Bers, Co-Pi Ev Fedorenko) *The cognitive and neural mechanisms of computer programming in young children: storytelling or solving puzzles?* (2017-2019) Awarded: \$300,000

NSF IIS – Cyber-Human Systems (PI Orit Shaer; co-PI Marina Bers) *Making the invisible tangible: Reimagining science education in kindergarten through reality-based interfaces* (2016- 2020) Awarded: \$1,195,698

Scratch Foundation (PI Marina Bers) *ScratchJr: developing educational materials* (2013-2024) Awarded: \$555,000

Museum of Science Boston (PI Marina Bers) *Unplugged computational thinking curriculum* (2017-2022) Awarded: \$330,760

Lego Foundation (PI Chris Rogers; Co-PI Marina Bers, Brian Gravel; Ethan Donnelly) *Maker Spaces in Education* (2015-2017) Awarded: \$200,000

PBS (PI Marina Bers) *Adapting the ScratchJr interface design for the PBS audience.* (2015) Awarded \$30,000

NSF SBIR Phase I (PI Marina Bers), *KinderBots: robotics and programming in early childhood education* (2014) Awarded: \$150,000

NSF SBIR Phase II (PI Marina Bers), *Making and programming robots in early childhood education.* (2015-2017) Awarded: \$750,000

NSF DRK-12 (PI Marina Bers, co-PI Mitchel Resnick) *ScratchJr: Computer programming in early childhood education as a pathway to academic readiness and success* (2011-2014) Awarded: \$812,790

NSF REU (PI Marina Bers) *ScratchJr: Computer programming in early childhood education as a pathway to academic readiness and success* (2012) Awarded: \$16,000

NSF Supplement (PI Marina Bers) *Ready for Robotics: The missing T and E of STEM in early childhood education* (2014) Awarded: \$82,000

NSF REU (PI Marina Bers) *Ready for Robotics: The missing T and E of STEM in early childhood education* (2012) Awarded: \$43,000.

NSF DRK-12 (PI Marina Bers) *Ready for Robotics: The missing T and E of STEM in early childhood education* (2011-2014) NSF DRL-1118897 Awarded: \$416,282

NCHIA (PI Chris Rogers; Co-PI, Ethan Danahy, Rainer Frost, Dan Hannon, Rob White, Paul Lehrman, Marina Bers, Sam Liggero and John Hodgman) *Changing the Classroom: Building Student-led Learning* (2012) Awarded: \$36,000

NSF REU (PI Marina Bers) *Tangible programming in kindergarten. Undergraduates Research Experiences* (2012) Awarded: \$32,775

NSF REU (PI Marina Bers) *Virtual communities of learning. Undergraduates Research Experiences* (2009) Awarded: \$18,000

NSF (PI Marina Bers; co-PI Robert Jacob) *Tangible Programming in Early Childhood: Revisiting Developmental Assumptions through New Technologies* (2008-2011) NSF DRL-0735657 Awarded: \$445,110.

Deborah Munroe Noonan Memorial Fund (PI Marina Bers) *A virtual community for Pediatric Transplant Patients* (2008-2009) Awarded: \$75,000

NSF (PI Marina Bers) *CUSP: Computing Undergraduate Scholars Program* (2006-2008) NSF IIS- 0447166 Awarded: \$32,238

CICU Cardiac Clinical Research and Education Fund (PI Marina Bers) *Children's Hospital, Boston* (7/2007-1/2008) Awarded: \$10,000

NSF (PI Chris Rogers, co-PI Marina Bers, A Finkelstein, M Klawe & Rusinkeiwicz) *Telling the Story - Learning Math, Science and Engineering Through Animation* (2005-2008) NSF IIS- 0511979 Awarded: \$319,186

NSF Career Award (PI Marina Bers) *Communities of learning and care: Multi-user environments that promote positive youth development* (2005-2009) NSF IIS-0447166 Awarded: \$476,066

Tisch College (PI Marina Bers) *Faculty Fellowship. Tufts University. New technologies and civic engagement* (2004-2006) Awarded: \$30,000

Academic Technology (PI Marina Bers) *Tufts University. A Partnership in Technology Faculty Grant Program. Virtual Communities of Learning and Practice: A Constructionist Authoring Toolkit* (2002-2003) Awarded: \$30,000 plus equipment

Tisch College (PI Marina Bers) *Education for Active Citizenship Grant. Tufts University A virtual participatory community: technology and civics education* (2002) Awarded: \$3,500

NSF (PI Chris Rogers; co –PI Marina Bers) *Multi-threaded Instruction: Forming Multi-disciplinary Research Groups to Improve Undergraduate Education* (2002-2005) Awarded: \$372,972

Microsoft Research (PI Marina Bers) *Virtual Worlds Research* (1998-1999) Awarded: \$30,000 plus equipment, trips and stipend

Professional Service

Awards Committee, Jan Hawkins Award, AERA (2021)

Co-Chair, International Conference on Computational Thinking in Education (2016-2017) organized by Education University of Hong Kong

Co-Chair, International Conference of Interaction Design for Children (IDC 2015) organized by ACM

Advisory Board, Common Sense Media (2013-present)

Advisory Board, NSF's CADRE-DRK-12 Center (2014 2016)

Board Member, Several STEM-C NSF Proposals (2014 - Present)

Associate Editor, Journal of the Learning Sciences (2011-2013)

Board Member, Center of Design Innovation, University of North Carolina (2004-2006)

Member, Editorial board of the Journal of the Learning Sciences, the Online Experience Journal, the Journal of Advances on Human Computer Interaction, the Journal of Applied

Developmental Science

Reviewer, Proposals for NSF, the Icelandic Research Society, and the Israeli National Science Foundation

Reviewer, Papers for the Journal of Educational Computing Research, AERA and ICLS conference, Multimedia on Story Representation, Mechanism and Context (ACM), Developmental Psychology Journal, Early Education and Development Journal, International Workshop on Groupware '07, Cyberpsychology & Behavior, CHI

Reviewer, Book proposals for MIT Press, Merrill Prentice Hall, Routledge, Oxford University Press

Consulting

Consulting for school districts, private schools, museums, media and toy companies and private foundations and non-profits. Professional development workshops for early childhood teachers throughout the world.

Products

KIBO

A developmentally appropriate robotics kit for children 4 to 7 years old created by Bers and her DevTech Research Group at Tufts University. The KIBO kit includes wheels, motors, light output, a sound recorder, and a variety of sensors (Sound, Light, and Distance sensors). KIBO is designed to work without any screen time using wooden programming blocks and can be decorated with art and recyclable materials. It is commercialized by KinderLab Robotics and can be found in over 64 countries.

ScratchJr

A free programming application for children ages 5-7 that runs on iPads, Android tablets, Amazon tablets, and Chromebooks. ScratchJr utilizes block programming to allow children to create their own imaginative stories and games. The ScratchJr programming application was created as a collaboration among the DevTech Research Group at Tufts University, MIT's Lifelong Kindergarten Group, and the Playful Invention Company. Since its launch in 2014, ScratchJr has been translated to over 50 languages and has had over 30 million downloads worldwide.

ScratchJr Coding Cards

A deck of 75 activity cards covering fun and exciting projects designed to educate young children with the visual programming language, ScratchJr. Written by Bers and Dr. Amanda Sullivan, the exercises in ScratchJr Coding Cards will encourage kids to develop coding skills as well as foundational concepts for literacy, math, planning, and problem-solving, all while having fun. These cards are intended to support teaching of ScratchJr in both home and school settings.

Books and Special Issues

Bers, M., A. Strawhacker and A. Sullivan (2022), "The state of the field of computational

thinking in early childhood education”, OECD Education Working Papers, No. 274, OECD Publishing, Paris.

- Bers, M. U. (2022) *Beyond Coding: How children learn human values through programming*, Cambridge, MA: The MIT Press
- Bers, M.U (Ed.) (2021) *Teaching Computational Thinking and Coding to Young Children*, IGI Global
- Bers, M. U. (2020 -second edition with revised content). *Coding as a playground: Computational thinking and programming in early childhood*. Routledge.
- Bers, M. U. (2018). *Coding as a playground: Computational thinking and programming in early childhood*. Routledge.
- Bers M. U. & Resnick, M (2015) *The Official ScratchJr Book: Help your Kids Learn to Code*, No Starch Press, CA.
- Bers, M. U. (2012) *Designing Digital Experiences for Positive Youth Development: From playpen to playground*. Oxford University Press.
- Bers, M. U. (Winter 2010). *New Directions for Youth Development*. Special Issue: New Media and Technology: Youth as Content Creators, Issue 128.
- Bers, M U. (2008) *Blocks to Robots: Learning with Technology in the Early Childhood Classroom*. Teachers College Press, NY.

Refereed Papers in Academic Journals

- Bers, M. U. (2023). [El desarrollo de Scratch-Jr: el aprendizaje de programación en primera infancia como nueva alfabetización](#). *Virtualidad, Educación y Ciencia*, 14(26), 43-62.
- Yang, D., Yang, Z., & Bers, M. U. (2023). [The efficacy of a computer science curriculum for early childhood: evidence from a randomized controlled trial in K-2 classrooms](#). *Computer Science Education*, 1-21.
- Ben Ari, A., Levinson, T., Bers, M. U., & Rosenberg-Kima, R. B. (2023). [Nurturing Computational Thinking in an Israeli Kindergarten with the CAL-KIBO Robotics Curriculum](#). American Educational Research Association, Chicago, IL.
- Blake-West, J. C., & Bers, M. U. (2023). [ScratchJr design in practice: Low floor, high ceiling](#). *International Journal of Child-Computer Interaction*, 37. <https://doi.org/10.1016/j.ijcci.2023.100601>
- Yang, Z. & Bers, M. (2023). [Examining gender difference in the use of scratchjr in a programming curriculum for first graders](#). *Computer Science Education*.
- Bers, M. U., Blake-West, J., Kapoor, M. G., Levinson, T., Relkin, E., Unahalekhaka, A., & Yang, Z. (2023). [Coding as another language: Research-based curriculum for early childhood computer science](#). *Early Childhood Research Quarterly*, 64, 394–404. <https://doi.org/https://doi.org/10.1016/j.ecresq.2023.05.002>

- Relkin, E., Johnson, S. K., & Bers, M. U. (2023). A Normative Analysis of the TechCheck Computational Thinking Assessment. *Educational Technology & Society*, 26(2), 118-130. [https://doi.org/10.30191/ETS.202304_26\(2\).0009](https://doi.org/10.30191/ETS.202304_26(2).0009)
- Kapoor, M. G., Yang, Z., & Bers, M. (2023). Supporting Early Elementary Teachers' Coding Knowledge and Self-Efficacy Through Virtual Professional Development. *Journal of Technology and Teacher Education*.
- Levinson, T., & Bers, M. U. (2022). [Student Centered Computational Thinking for Children with Disabilities](#). American Educational Research Association (AERA) Annual Meeting, San Diego, CA.
- Strawhacker, A., Relkin, E., Bers, M.U. (2022). Designing an Adaptive Assessment for Preschool children's Robotics Knowledge. *Educational Designer*, 4(15). ISSN 1759-1325.
- Unahalekhaka, A., Bers, M.U. (2022). Evaluating young children's creative coding: rubric development and testing for ScratchJr projects. *Educ Inf Technol*. <https://doi.org/10.1007/s10639-021-10873-w>
- Bers, M., Govind, M., & Relkin, E. (2021) Coding as Another Language: Computational Thinking, Robotics, and Literacy in First and Second Grade. in Ottenbreit-Leftwich, A., & Yadav, A. (2021). Computational Thinking in PreK-5: Empirical Evidence for Integration and Future Directions. ACM and the Robin Hood Learning + Technology Fund, New York, NY
- Govind, M. & Bers, M. (2021). Assessing Robotics Skills in Early Childhood: Development and Testing of a Tool for Evaluating Children's Projects. *Journal of Research in STEM Education*, 7(1).
- Bers, M. (2021). Coding, robotics and socio-emotional learning: developing a palette of virtues PIXEL-BIT. *Revista de Medios y Educación*, 62, 309-322.
- de Ruiter, L. E. & Bers, M. U. (2021). The Coding Stages Assessment: development and validation of an instrument for assessing young children's proficiency in the ScratchJr programming language. *Computer Science Education*. DOI: 10.1080/08993408.2021.1956216
- Relkin, E., de Ruiter, L.E., Bers, M.U. (2021). Learning to Code and the Acquisition of Computational Thinking by Young Children. *Computers & Education*.
- Unahalekhaka, A., & Bers, M. U. (2021). Taking coding home: Analysis of ScratchJr usage in home and school settings. *Educational Technology Research and Development*. <https://doi.org/10.1007/s11423-021-10011-w>
- Relkin, E., de Ruiter, L., Bers, M. U. (2020). TechCheck: Development and Validation of an Unplugged Assessment of Computational Thinking in Early Childhood Education. *Journal of Science Education and Technology*. DOI: 10.1007/s10956-020-09831-x
- Strawhacker, A., Verish, C., Shaer, O., & Bers, M. U. (2020). Designing with Genes in Early Childhood: An exploratory user study of the tangible CRISPEE technology. *International Journal of Child-Computer Interaction*. Advance Online Publication.

<https://doi.org/10.1016/j.ijcci.2020.100212>

- Relkin, E., Govind, M., Tsiang, J., & Bers, M. (2020). How Parents Support Children's Informal Learning Experiences with Robots. *Journal of Research in STEM Education*, 6(1), 39-51.
- Ivanova, A., Srikant, S., Sueoka Y., Kean, H., Dhamala, R., O'Reilly, U., Bers, M., Fedorenko, E., (2020). Comprehension of computer code relies primarily on domain-general executive brain regions *eLife* 2020, DOI: 10.7554/eLife.58906
- Strawhacker, A., Verish, C., Shaer, O., & Bers, M. U. (2020). Young Children's Learning of Bioengineering with CRISPEE: A Developmentally Appropriate Tangible User Interface. *Journal of Science Education and Technology*, 1-21
- Govind, M., Relkin, E., & Bers, M. U. (2020). Engaging Children and Parents to Code Together Using the ScratchJr App. *Visitor Studies*.
- Hassenfeld, Z. R., Govind, M., de Ruiter, L. E., & Bers, M. U. (2020). If You Can Program, You Can Write: Learning Introductory Programming Across Literacy Levels. *Journal of Information Technology Education: Research*, 19, 65-85.
- Hassenfeld, Z. R., & Bers, M. U. (2020). Debugging the Writing Process: Lessons From a Comparison of Students' Coding and Writing Practices. *The Reading Teacher*, 1-12
- Bers, M. U. (2019). Coding as another language: a pedagogical approach for teaching computer science in early childhood. *Journal of Computers in Education*, 1-30.
- Sullivan, A., & Bers, M. U. (2019). Computer Science Education in Early Childhood: The Case of ScratchJr. *Journal of Information Technology Education: Innovations in Practice*, 18, 113-138.
- Fedorenko, E., Ivanova, A., Dhamala, R., & Bers, M. U. (2019). The language of programming: A cognitive perspective. *Trends in cognitive sciences*, 23(7), 525-528.
- Strawhacker, A., & Bers, M. U. (2019). What they learn when they learn coding: investigating cognitive domains and computer programming knowledge in young children. *Educational Technology Research and Development*, 67(3), 541-575.
- Bers, M. U., González-González, C., & Armas-Torres, M. B. (2019). Coding as a playground: Promoting positive learning experiences in childhood classrooms. *Computers & Education*, 138, 130-145.
- Sullivan, A. & Bers, M. U. (2019). VEX Robotics Competitions: Gender differences in student attitudes and experiences. *Journal of Information Technology Education: Research*, 18, 97- 112.
- Sullivan, A., & Bers, M. U. (2019). Investigating the use of robotics to increase girls' interest in engineering during early elementary school. *International Journal of Technology and Design Education*, 29(5), 1033-1051.
- Bers, M. U. (2018). Coding and Computational Thinking in Early Childhood: The Impact of ScratchJr in Europe. *European Journal of STEM Education*, 3(3).

- Strawhacker, A. and Bers, M. U. (2018). Promoting Positive Technological Development in a Kindergarten Makerspace: A Qualitative Case Study. *European Journal of STEM Education*, 3(3).
- Strawhacker, A., & Bers, M. U. (2018). What They Learn When They Learn Coding: Investigating cognitive development and computer programming in young children. *Educational Technology Research and Development*. Online First. <https://doi.org/10.1007/s11423-018-9622-x>
- Sullivan, A. & Bers, M. U. (2018). The Impact of Teacher Gender on Girls' Performance on Programming Tasks in Early Elementary School. *Journal of Information Technology Education: Innovations in Practice*, 17, 153-162.
- Strawhacker, A., Bers, M. U. (2018). Makerspaces for Early Childhood Education (Principles of Space Redesign) & Maker values of early childhood educators, organizing a grassroots space. *The LEGO Foundation*. ISBN: 978-87-999589-4-8.
- Gravel, B. E., Bers, M. U., Rogers, C., Danahy, E. (2018). *Making Engineering Playful in Schools*. *The LEGO Foundation*. ISBN: 978-87-999589-4-8.
- Elkin, M., Sullivan, A., & Bers, M. U. (2018). Books, Butterflies, and 'Bots: Integrating Engineering and Robotics into Early Childhood Curricula. *Early Engineering Learning* (pp. 225-248). Springer, Singapore
- Albo-Canals, J., Barco, A., Relkin, E., Hannon, D., Heerink, M., Heinemann, M., Leidl, K., & Bers, M. (2018). A Pilot Study of the KIBO Robot in Children with Severe ASD. *International Journal of Social Robotics*. Online First. doi:10.1007/s12369-018-0479-2
- Strawhacker, A., Sullivan, A., Verish, C., Bers, M. U., & Shaer, O. (2018). Enhancing Children's Interest and Knowledge in Bioengineering through an Interactive Videogame. *Journal of Information Technology Education: Innovations in Practice*, 17, 055-081.
- Bers, M. U. (2018). The Seymour test: Powerful ideas in early childhood education. *International Journal of Child-Computer Interaction*. DOI: 10.1016/j.ijcci.2017.06.004
- Hilliard, L., Buckingham M. H., Geldhof, J. G., Ganset, P., Stack C., Gelgoot, E. S., Bers M. U., Lerner, R. M. (2018). Perspective taking and decision-making in educational game play: A mixed- methods study. *Applied Developmental Science*.
- Bers, M. U., Strawhacker, A. L., & Vizner, M. (2018). The design of early childhood makerspaces to support Positive Technological Development: Two case studies. Library Hi Tech. Advance Online Publication. doi: 10.1108/LHT-06-2017-0112.
- Strawhacker, A. L., Portelance, D., & Bers, M. U. (Under review). What They Learn When They Learn Coding: A study using the ScratchJr Solve It programming assessment for young children. *Educational Technology Research & Development*.
- Pugnali, A., Sullivan, A., & Bers, M. U. (2017). The Impact of User Interface on Computational Thinking. *Journal of Information Technology Education: Innovations in Practice*.
- Strawhacker, A. L., Lee, M. S. C., & Bers, M. U. (2017). Teaching tools, teachers' rules:

exploring the impact of teaching styles on young children's programming knowledge in ScratchJr. *International Journal of Technology and Design Education*. DOI: 10.1007/s10798-017-9400-9

- Sullivan, A., & Bers, M. U. (2017). Dancing robots: Integrating art, music, and robotics in Singapore's early childhood centers. *International Journal of Technology and Design Education*. Online First. doi:10.1007/s10798-017-9397-0
- Elkin, M., Sullivan, A., & Bers, M. U. (2016). Programming with the KIBO Robotics Kit in Preschool Classrooms. *Computers in the Schools*, 33:3, 169-186.
- Sullivan, A. & Bers, M. U. (2016). Girls, boys, and bots: Gender differences in young children's performance on robotics and programming tasks. *Journal of Information Technology Education: Innovations in Practice*, 15, 145-165.
- Hilliard, L., Buckingham, M., Geldhof, G. J., Gansert, P., Stack, C., Gelgoot, E., Bers, M. U., & Lerner, R. (2016). Perspective taking and decision-making in educational game play: A mixed- methods study. *Applied Developmental Science*. pp. 1-13.
- Portelance, D.J., Strawhacker, A., & Bers, M. U. (2015). Constructing the ScratchJr programming language in the early childhood classroom. *International Journal of Technology and Design Education*. pp. 1-16.
- Strawhacker, A. L., & Bers, M. U. (2015). "I want my robot to look for food": Comparing children's programming comprehension using tangible, graphical, and hybrid user interfaces. *International Journal of Technology and Design Education*, 25(3). pp. 293-319.
- Sullivan, A., & Bers, M. U. (2015). Robotics in the early childhood classroom: Learning outcomes from an 8-week robotics curriculum in pre-kindergarten through second grade. *International Journal of Technology and Design Education*. Online First.
- Elkin, M., Sullivan, A., & Bers, M. U. (2014). Implementing a robotics curriculum in an early childhood Montessori classroom. *Journal of Information Technology Education: Innovations in Practice*, 13, 153-169.
- Kazakoff, E.R. & Bers, M. U. (2014). Put your robot in, Put your robot out: Sequencing through programming robots in early childhood. *Journal of Educational Computing Research*, 50(4).
- Strawhacker, A. L., & Bers, M. U. (2014). "I want my robot to look for food": Comparing children's programming comprehension using tangible, graphical, and hybrid user interfaces. *International Journal of Technology and Design Education*. Advance online publication. doi: 10.1007/s10798-014-9287-7
- Bers, M. U., Flannery, L.P., Kazakoff, E.R., & Sullivan, A. (2014) Computational thinking and tinkering: Exploration of an early childhood robotics curriculum, *Computers & Education*, 72, 145-157.
- Bers, M. U., Seddighin, S., & Sullivan, A. (2013). Ready for robotics: Bringing together the T and E of STEM in early childhood teacher education. *Journal of Technology and Teacher Education*, 21(3), 355-377.

- Sullivan, A., Kazakoff, E.R., & Bers, M. U. (2013). The Wheels on the Bot Go Round and Round: Robotics Curriculum in Pre-Kindergarten. *Journal of Information Technology Education: Innovations in Practice*, 12, 203-219.
- Flannery, L.P. and Bers, M. U. (2013). Let's Dance the "Robot Hokey-Pokey!": Children's programming approaches and achievement throughout early cognitive development. *Journal of Research on Technology in Education*, 46(1), 81-101.
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- Levinson, T. & Bers, M.U. (2023). Don't Assume Deficit: Disability, Coding, and Computational Thinking in Early Elementary School. Paper presented at American Educational Research Association, Annual Meeting, Chicago, IL.
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- Relkin, E. & Bers, M. U. (2020, April). Exploring the Relationship Among Coding, Computational Thinking, and Problem Solving in Early Elementary School Students [Symposium]. Annual Meeting of the American Educational Research Association (AERA), San Francisco, CA
- Strawhacker, A., Verish, C., Shaer, O., & Bers, M. U. (2020, April). Debugging as Inquiry in Early Childhood: A case study using the CRISPEE prototype. In K. Mills (chair), Computational Thinking for Science Learning. Symposium conducted at the Annual Meeting of the American Educational Research Association (AERA), San Francisco, CA.
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Kazakoff, E.R., & Flannery, L. (2011). Kindergarten Robotics Workshop to be conducted at the *Digital Media and Learning Conference, 2 - 5 March 2011, California: Los Angeles.*

Satoh, K, Blume, E, DeMaso, DR, Gonzalez-Heydrich, J & Bers, M. U. (2008). *A Virtual Community for Post-Transplant Pediatric Patients.* Abstract of the International Society for Heart and Lung Transplantation 28th Annual Meeting and Scientific Sessions; Boston, Massachusetts; 2008 April 9-12.

Satoh, K., & Bers, M. U. (2008, April). *Virtual community for Pediatric Post solid-organ transplant patients.* Poster session presented at the 2008 National Conference on Child Health Psychology, Miami Beach, Florida.

Bers, M. U. & LeeKennan, D (2007) "Ready for Robotics: a project-based approach to teach young children and their teachers about technology by making and programming interactive robots." *NAEYC Annual meeting.* Chicago, November 7-10, 2007

Irish-Hauser, Goldberg, Wilde, Bers, Ioannone, & Economos (2007) Using Technology and Online Collaboration to Enhance Training of After School Program Leaders in Nutrition and Physical Activity. International Conference on Urban Health. Oct 31-Nov 2, 2007. Baltimore, MD.

Bers, M. U. (2007) "An intergenerational community of practice: Engaging in positive technological development through robotics" AERA Annual Meeting, April 9-13. Chicago

Bers, M. U. (2007) "Technobiographies: Researching Life Stories with Technology" Discussant for session at AERA Annual Meeting, April 9-13. Chicago

Bers, M. U. (2007) "Developmental Technologies: Positive Uses of Technology for Youth

Learning and Development”. Chair of symposium presenting papers from students in my DevTech research group. SRCD-Biennial meeting- Boston 2007

Satoh, K., McVey, M., Grogan, D. & Bers, M. U. (2006). Zora: Implementing Virtual Communities of Learning and care (VCLC). Presentation at the New Media Consortium's, Regional Conference at San Antonio TX.

Bers, M. U. (2006) “Developmental Technologies vs. Educational Technologies: Designing and studying learning experiences in complex contexts”. American Educational Research Association (AERA) Annual Meeting SF April 2006

Chau, C., & Bers, M. U. (2006) “Exploring the Relationships Between Educational Technology and Youth Development: A Case Study of Lego Summer Camp”. American Educational Research Association (AERA) Annual Meeting SF April 2006.

Bers, M. U. (2006) “Early Childhood Robotics for Learning”. Innovative symposium presented at the International Conference of the Learning Sciences (ICLS'06), 7th International Conference of the Learning Sciences (ICLS '06), Bloomington, IN.

Chau, C., Mathur, A., & Bers, M. U. (2006). “Active Citizenship through Technology: Collaboration, connection, and civic participation”. 7th International Conference of the Learning Sciences (ICLS '06), Bloomington, IN.

Chau, C., & Bers, M. U. (2006). “Positive Technological Development: A systems approach to understanding youth development when using educational technologies”. 7th International Conference of the Learning Sciences (ICLS '06), Bloomington, IN

Chau, C., & Bers, M. U. (2005). Positive technological development: A research methodology for exploring relationships between youth development and educational technologies. Symposium presentation at the 2005 Annual American Psychological Association Convention (APA), Washington DC.

Bers, M. U. (2005). “Networked technologies to foster positive youth development. Symposium Organized and chaired at the American Psychological Association (APA) Annual Convention'05. Washington, DC.

Bers, M. U. (2005). “Identity Construction Environments: the Zora Virtual Community” Presentation at the American Psychological Association (APA) Annual Convention'05. June 21, 2005. Washington, DC.

Bers, M. U. (2004). “Parents, Children and Technology: Making Robots, Exploring Cultural Heritage and Learning Together” American Educational Research Association (AERA) Annual Meeting LA, April 2004

Bers, M. U. (2003). “The use of virtual environments to develop a sense of self and personal values” American Educational Research Association (AERA) Annual Meeting Chicago, April 2003.

Bers, M. U., Gonzalez-Heydrich, G., DeMaso, D., Corsini, E. & Harmon, W. (2000) "Zora: A Pilot Virtual Community in the Pediatric Dialysis Unit." American Society for Pediatrics., Boston, MA

Selected Invited Presentations and Keynotes

- Bers, MU (2022) Playgrounds vs. Playpens: The Coding Brain and Computational Thinking In Early Childhood, Cognitive & Brain Science Seminar Series, Tufts University.
- Bers, MU (2022) Playgrounds vs. Playpens: Coding, Computational Thinking, and Robotics in Early Childhood, Acton Discovery Museum Speaker Series.
- Bers, MU (2022) Beyond Coding: Computational Playgrounds in Early Childhood Education, Inaugural Professional Development Talk, Boston College.
- Bers, MU (2021) Playgrounds and Playpens: the role of new technologies in learning, Psychology day, United Nations.
- Bers, MU (2020) Coding Playgrounds: Computer Science and Robotics in Early Childhood, Jamaica Commission for Education Reform, Jamaica
- Bers, MU (2020) Coding Playgrounds: Computer Science and Robotics in Early Childhood, MIT Alumni Association
- Bers, MU (2020) Coding in Early Childhood: Puzzle solving or storytelling, MIT Media Studies Colloquium.
- Bers, MU (2020) New technologies for learning during the pandemic, NIEER conference for superintendents.
- Bers, MU (2020) Beyond Coding: Socio-emotional learning in the computer science class, EDUTECH Asia
- Bers, MU (2020) Coding Playgrounds in Early Childhood, US Dept of Education STEM conference
Bers, MU (2020) Coding in early childhood; ENLight Conference, Madrid, Spain
- Bers, M. U. (2019), Coding, Computational Thinking and Robotics in Early Childhood; University of Braga, Portugal.
- Bers, M. U. (2019), Coding as a Developmental Playground: Computational Thinking and Robotics in Early Childhood, NHU, New Hampshire Durham, Early Childhood STEM Symposium
- Bers, M. U. (2018), Coding as a Developmental Playground: Computational Thinking and Robotics in Early Childhood; Boston, MA. The Power of Play Symposium.
- Bers, M. U. (2018), Coding as a Developmental Playground: Computational Thinking and Robotics in Early Childhood; Chicago ISTE
- Bers, M. U. (February, 2018) “La programmation en tant que place de jeu développementale: la pensée informatique et la robotique dans la petite enfance”, Invited Keynote, Didapro 7 conference, Laussane, Switzerland.
- Bers, M. U. (December, 2017) “Coding as a Developmental Playground: Computational Thinking and Robotics in Early Childhood”, NIMH Director’s Innovation Speaker Series, Neuroscience Center, National Institute for Mental Health, Bethesda, MD.
- Bers, M. U. (November, 2017) “Aprendiendo a programar jugando en la etapa inicial”, Keynote, Scratch conference, Costa Rica

- Bers, M. U. (June, 2017) “Coding as a Playground: programming and computational thinking in early childhood”, Invited Keynote, Educational technologies conference UNO, Mexico
- Bers, M. U. (October, 2016) “Robots y gatos: nuevas tecnologías para el aprendizaje de STEAM en edad temprana”, Invited Guest lecture for doctoral program, School of Psychology, University of Seville, Spain.
- Bers, M. U. (June, 2016) “Coding in the Playground: Young children, robots and kittens”, Keynote at STEM Conference, Tufts University, Medford, MA
- Bers, M. U. (July, 2016) “El pensamiento computacional”, Invited Keynote, INTEC, Ministry of Education Conference for Professional Development, Buenos Aires, Argentina
- Bers, M. U. (April, 2016) “Computational thinking and coding in early childhood education”, Keynote at the STEM Symposium for Early Education, White House, Washington, DC
- Bers, M. U. (April, 2016) “Coding in the Playground: Young children, robots and kittens”, New Technologies in Education, Harvard University/Universidad Complutense de Madrid, Cambridge, MA
- Bers, M. U. (December 2015) “Out of the playpen into the playground: young children learning to code through robotics”, Keynote at Lincoln school, Providence, Rhode Island
- Bers, M. U. (December 2015) “Out of the playpen into the playground: young children learning to code through robotics”, Keynote Presentation at New York Academy of Science
- Bers, M. U. (December, 2015) “Technological playgrounds: Teaching robotics to young children in a developmentally appropriate Way”, Keynote at the Playmaker symposium. Singapore
- Bers, M. U. (November, 2015) “Nuevas tecnologías para el aprendizaje”, Monsterrat School, Barcelona, Spain
- Bers, M. U. (September 2015) “Nuevas tecnologías para el aprendizaje”, Keynote at Santillana Publishers principal’s conference, Buenos Aires, Argentina
- Bers, M. U. (June, 2015), “Out of the playpen into the playground: learning with technology in the digital age”, Invited keynote, NAEYC Conference. New Orleans
- Bers, M. U. (June, 2015) “Out of the playpen into the playground: learning with technology in the digital age”, Keynote at Miriam Fund fundraiser, Belmont, MA
- Bers, M. U. (June, 2015) “A view from child development: Designing Interfaces and User Experiences for Children”, IDC Conference, Medford, MA
- Bers, M. U. (April, 2015), “Out of the playpen into the playground: learning with technology in the digital age”, Invited keynote, US Consulate, Barcelona, Spain
- Bers, M. U. (April, 2015), “Out of the playpen into the playground: learning with technology in the digital age”, Invited keynote, STEAM Conference, Barcelona,

Spain

- Bers, M. U. (November, 2014) "Out of the playpen into the playground: learning with technology in the digital age", Keynote at Innovate Mississippi conference, Mississippi.
- Bers, M. U. (August, 2014) Lecture Series, Combined Jewish Philanthropies "Out of the playpen into the playground: learning with technology in the digital age", Boston, MA
- Bers, M. U. (April, 2014) "Building the STEM Workforce Begins Early: A Focus on STEM Learning Ages 3-8" at the 2014 AERA Annual Meeting. Presidential Session.
- Bers, M. U. (April 2014) NSF Distinguished Lecture Series: "Playgrounds not playgrounds: Learning with technology", Washington, DC
- Bers, M. U. (May, 2014) "Young Children as Programmers and Engineers: A Hands-On Approach" (workshop presentation, Department of Early Education and Care Spring STEM Conference for Early Educators, MA, May 22, 2014)
- Bers, M. U. (May 2014) keynote: "Young Children as Programmers and Engineers: A Hands-On Approach" (The Early Childhood Investigations Conference, Eastern Connecticut State University, CT, May 9, 2014).
- Bers, M. U. (March 2014) "Coding 101: A hands-on introduction to ScratchJr", Sandbox Summit, Cambridge, MA,
- Bers, M. U. (2014, November 6). Marina Bers: Young programmers: Think playgrounds, not playpens. TEDx Retrieved from <http://www.tedxjackson.com/>
- Strawhacker, A. L., & Bers, M. U. (2014). ScratchJr: Computer Programming in Early Childhood Education as a Pathway to Academic Readiness and Success. *Poster presented at DR K-12 PI Meeting, 5 August 2014, Washington, D.C.*
- Bers, M. U. (2013) "The Missing T & E in Early Childhood STEM: Young Children as Programmers and Engineers" (presentation, NSF-Smithsonian STEM Smart Conference, Washington, DC
- Bers, M. U. (2008) "De robots a mundos virtuales: nuevas tecnologias en la educacion". Seminario de Actualizacion. Fundacion Educ.ar. Ministerio de Educacion. April 14th , Argentina.
- Bers, M. U. (2008) "De robots a mundos virtuales: nuevas tecnologias para el aprendizaje". Seminario Permanente de Metodologia de la Investigacion. Universidad de San Andres, April 26th, 2008 an Isidro, Provincia de Buenos Aires, Argentina,
- Bers, M. U. (2008) Nuevas tecnologias para el aprendizaje. Carrera de Ciencias de la Comunicacion. Universidad de Buenos Aires, April 1 st, 2008, Capital Federal, Argentina
- Bers, M. U. (2007) Positive Technological Development in Complex Learning Settings. Georgia Tech. College of Computing. January 8, 2007
- Bers, M. U. (2007) "Post-Transplant pediatric patients: virtual communities of learning and care" Medical Informatics Seminar. Boston University. Boston University Medical

Campus (BUMC), January 25, 2007

Bers, M. U. (2007) "Virtual Communities of Learning and Care" NYU Steinhardt School of Education, April 16, 2007.

Bers, M. U. (2007) "Virtual Communities of Learning and Care: Post-transplant pediatric patients @ Children's Hospital Boston". Center for Communication Disorders. Children's Hospital Waltham. Waltham, MA. March 15, 2007.

Bers, M. U. (2007) "Active Citizenship through Technology: a pre-orientation for incoming freshman" Educating the Ne(x)t generation conference. Experimental College. Tufts University. February 2, 2007

Bers, M. U. (2007) "From virtual worlds to robots: Engaging children in positive uses of technology" Freestschrift for David Elkind. Eliot Pearson Department of Child Development. Tufts University. May 9, 2007

Bers, M. U. (2007) Positive Technological Development in Complex Learning Settings. Georgia Tech. College of Computing. January 8, 2007

Bers, M. U. (2006) "Virtual communities of learning and care: technologies to promote positive youth development", APA Science Leadership Conference (SciLC), Washington, DC

Bers, M. U. (2006) "A Pediatric Post-Transplant Virtual Community" E-Media and Behavior Change, New England Research Institute, Watertown, MA.

Bers, M. U. (2006) Tecnologías y Educación: desafíos y oportunidades. Keynote speaker (via video conference in the Conference in "Internet como espacio educativo" organized by Educ.Ar, Educational Technologies division of the Argentine Ministry of Education. Jornadas de capacitación docente educ.ar - Instituto Marín

Bers, M. U. (2006) "The design of developmental technologies" Technologies for Lifelong Kindergarten, MIT Media Laboratory.

Bers, M. U. (2005). *Virtual Communities for Learning and Care*. Research seminar. Dept. of Psychiatry. Children's Hospital. Boston, MA

Bers, M. U. (2005) "Technologies to foster Positive Youth Development". IDEAS Institute. MIT Media Laboratory.

Bers, M. U. (2005) "Virtual Environments: Strategies for Reducing Suffering in Traumatic Medical Treatment" Future of Health Symposium, September 26-27, 2005, Massachusetts Institute of Technology

Bers, M. U. (2004) "Fostering civic engagement by building a virtual city". Faculty forum on civic engagement. Tufts University

Bers, M. U. (2003) "Learning by Designing and Inhabiting Virtual Cities." Academic Technology's seminar Tufts University

Bers, M. U. (2003) "Project InterActions: parents and children learning robotics". Young Faculty Leaders Forum. Harvard University.

- Bers, M. U. (2002) "Educational Technologies: Designs and Challenges". Young Faculty Leaders Forum Harvard University.
- Bers, M. U. (2002) "A virtual community in a pediatric dialysis unit". Massachusetts Psychological Association
- Bers, M. U. (2002) "Computational Environments for Exploring Identity". Technology and self- seminars, MIT's Initiative on Technology and Self.
- Bers, M. U. (2001) "Using technology to create virtual support groups" Cyberpsychology Colloquium. Harvard University.
- Bers, M. U. (2000) "Identity Construction Environments: Technological Tools for Self-Exploration". Invited talk at Baystate Medical Center Children's Hospital.
- Bers, M. U. (2000) "Developing computer tools to support communities of pediatric patients and families" Health Care Technology Summit, MIT.
- Bers, M. U. (1999) "Social Dimensions of the Use of Interactive Technologies by Young People". Invited to NSF workshop organized by Center for Advanced Technology in Education, University of Oregon.
- Bers, M. U. (1999) "Children, Creativity and New Technologies: Implications for the Future". Guest speaker at conference organized by the Institute for Media Technology, Jonkoping University, Sweden.
- Bers, M. U. (1998) "Jornadas Internacionales de Informatica Educativa" guest speaker at teacher conference organized by the National Educational Technologies Institute, Bs. As., Argentina.
- Bers, M. U. (1998) "A constructionist perspective on values: a response to postmodern fragmented identity" Presentation at symposium "Identity, formation, dignity: The impacts of Artificial Intelligence upon Jewish and Christian Understandings of Personhood" organized by The Boston Theological Institute, MIT Artificial Intelligence Lab and Center for Faith and Science Exchange.