

Debra Bernstein
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EDUCATION

- Ph.D. University of Pittsburgh
Cognitive Psychology, August 2010
Dissertation title: *Developing Technological Fluency through Creative Robotics*
- M.S. University of Pittsburgh
Cognitive Psychology, 2006
Master's thesis title: *Searching for Signs of Intelligent Life: An Investigation of Young Children's Beliefs About Intelligence and Animacy*
- M.A. Teachers College, Columbia University
Cognitive Studies in Education/Educational Psychology, 2002
Master's thesis title: *An Exploration of the Development of Weight and Measurement Concepts in Preschool-Aged Children*
- B.A. University of Wisconsin-Madison
Psychology and Social Welfare, 1997

PROFESSIONAL APPOINTMENTS

- 2010-Present Senior Researcher, TERC
- 2003-2010 Researcher, University of Pittsburgh Center for Learning in Out-of-School Environments (UPCLOSE)
- 2002-2003 Research Psychologist, Institute of Child Health (London, UK)
- 2001-2002 Research and Development Analyst, *Blue's Clues* Television Show
- 1998-2000 Research Associate, Danya International, Inc.
- 1995-1997 Assistant Teacher, UW Preschool Lab

PEER-REVIEWED JOURNAL ARTICLES AND BOOK CHAPTERS

Bernstein, D., Puttick, G., Wendell, K., Shaw, F., Danahy, E., & Cassidy, M. (2022). Designing biomimetic robots: Iterative development of an integrated technology design curriculum. *Educational Technology Research and Development, 70*(1), 119-147.

Bernstein, D., Mutch-Jones, K., Cassidy, M. & Hamner, E. (2022). Teaching with robotics: creating and implementing integrated units in middle school subjects. *Journal of Research on Technology in Education*, 54(2), 161-176, DOI: 10.1080/15391523.2020.1816864.

Bopardikar, A., Bernstein, D., Drayton, B., & McKenney, S. (2021). Designing educative curriculum materials in interdisciplinary teams: designer processes and contributions. *Instructional science*, 49(2), 249-286.

Bopardikar, A., Bernstein, D., & McKenney, S. (2021). Designer considerations and processes in developing school-based citizen-science curricula for environmental education. *Journal of Biological Education*, 1-26.

Drayton, B., Bernstein, D., Schunn, C., & McKenney, S. (2020). Consequences of curricular adaptation strategies for implementation at scale. *Science Education*, 104(6), 983-1007.

Bopardikar, A., Bernstein, D., Drayton, B., & McKenney, S. (2018). Work-based curriculum to broaden learners' participation in science: Insights for Designers. *Research in Science Education*. DOI: <https://doi.org/10.1007/s11165-018-9731-x>

Pareja Roblin, N., Schunn, C., Bernstein, D., & McKenney, S. (2018). Exploring shifts in the characteristics of US government-funded science curriculum materials and their (unintended) consequences. *Studies in Science Education*, 54(1), 1-39.

Puttick, G., Bernstein, D., & Edwards, T. (2018). Design based research study of a Girl Scout program focused on energy conservation. *Educational Designer*, 3(10).

Mutch-Jones, K., Bernstein, D., Ludi, S. (2016). Creating access to computer science: Enhancing engagement and learning for students with visual impairments. *Visual Impairment and Deafblind Education Quarterly*, 61(4), 38-51.

Puttick, G., Kies, K. and Garibay, C., Bernstein, D. (2015). Learning and behavior change in a Girl Scout program focused on energy conservation: Saving energy to 'save the planet.' *Journal for Sustainability Education*, 45 (1).

Bernstein, D., & Puttick, G. (2014). Seeding social norms about energy conservation among Girl Scouts. *Applied Environmental Education & Communication*, 13(3), 171-182.

Gomez, K., Bernstein, D., Zywica, J., & Hamner, E. (2012). Building technical knowledge and engagement in robotics: An examination of two out-of-school programs. In B.Barker, G. Nugent, N. Grandgenett, & V.I. Adamchuk (Eds.), *Robotics in K-12 Education: A New Technology for Learning* (pp. 222-244).

Bernstein, D. & Crowley, K. (2008). Searching for signs of intelligent life: An investigation of young children's beliefs about robot intelligence. *Journal of the Learning Sciences*, 17(2), 225-247.

Lawrence, K., Bernstein, D., Pearson, R., Mandy, W., Campbell, R., & Skuse, D. (2008). Changing abilities in recognition of unfamiliar face photographs through childhood and adolescence:

Performance on a test of non-verbal immediate memory (Warrington RMF) from 6 to 16 years. *Journal of Neuropsychology*, 2(1), 27-45.

Bernstein, D., Crowley, K., & Nourbakhsh, I. (2007). Working with a robot: Exploring relationship potential in human-robot systems. *Interaction Studies*, 8(3), 465-482.

Nourbakhsh, I., Hamner, E., Ayoob, E., Porter, E., Dunleavy, B., Bernstein, D., Crowley, K., Lotter, M., Shelley, S., Hsiu, T., & Clancey, D. (2006). The Personal Exploration Rover: Educational assessment of a robotic exhibit for informal learning venues. *International Journal of Engineering Education*, 22(4), 777-791.

Kalish, C. W., Weissman, M. D., & Bernstein, D. (2000) Taking decisions seriously: Children's understanding of conventional truths. *Child Development*, 71(5), 1289-1308.

PEER-REVIEWED CONFERENCE PROCEEDINGS

Bernstein, D., Cassidy, M., Mutch-Jones, K., & Cross, J.L. (2022). Robots in Science: How middle school science teachers design integrated robotics units for their science classes. In Chinn, C., Tan, E., Chan, C., & Kali, Y. (Eds.) *Proceedings of the 16th International Conference of the Learning Sciences-ICLS2022*. Hiroshima, Japan: International Society of the Learning Sciences.

Ludi, S., Bernstein, D., & Mutch-Jones, K. (2018). Enhanced Robotics! Improving Building and Programming Learning Experiences for Students with Visual Impairments. In *Proceedings of the 2018 ACM SIGCSE Technical Symposium on Computer Science Education (SIGCSE '18)*. ACM, New York, NY, USA

Shaw, F., Wendell, K., Puttick, G., Bernstein, D., & Danahy, E. (2018). Problem scoping in designing biomimetic robots. In *Proceedings of the International Conference of the Learning Sciences*.

Bernstein, D., Drayton, B., McKenney, S., & Schunn, C. (2016). Designing science curriculum for implementation at scale: Considerations for diverse and resource-limited settings. In C. Looi, J. Polman, U. Cress, & P. Reimann (Eds.) *Transforming Learning, Empowering Learners: The International Conference of the Learning Sciences (ICLS) 2016* (pp. 886-889). Singapore: International Society of the Learning Sciences.

Hamner, E., Cross, J., Zito, L., Bernstein, D., & Mutch-Jones, K. (2016). Training Teachers to Integrate Engineering into Non- Technical Middle School Curriculum. In proceedings of *Frontiers in Education Conference (FIE)*, IEEE.

Cross, J., Hamner, E., Zito, L., Nourbakhsh, I., & Bernstein, D. (2016). Development of an Assessment for Measuring Middle School Student Attitudes towards Robotics Activities. In proceedings of *Frontiers in Education Conference (FIE)*, IEEE.

Puttick, G., Strawhacker, A., Bernstein, D., & Sylvan, E. (2014). "It's not as bad as using the toaster all of the time." Trade-offs in a Scratch game about energy use. *Proceedings of the International Conference of the Learning Sciences, Boulder, CO*.

Touretzky, D.S., Marghitu, D., Ludi, S., Bernstein, D., & Ni, L. (2013). Accelerating K-12 computational thinking using scaffolding, staging, and abstraction. *SIGCSE 2013, Denver, CO*.

Hamner, E., Lauwers, T., & Bernstein, D. (2010). The debugging task: Evaluating a robotics design workshop. *Proceedings of the AAAI Symposium on Using Robots to Promote Learning: Design and Evaluation*.

Hamner, E., Lauwers, T., Bernstein, D., Nourbakhsh, I., & DiSalvo, C. (2007). Robot Diaries: Broadening participation in the computer science pipeline through social technical exploration. In *Proceedings of the AAAI Symposium on Using AI to Motivate Greater Participation in Computer Science*.

Nourbakhsh, I., Hamner, E., Dunlavy, B., Bernstein, D., & Crowley, K. (2005). Educational Results of The Personal Exploration Rover Museum Exhibit, In *Proceedings of ICRA 2005, Barcelona, Spain*.

SELECTED CONFERENCE PRESENTATIONS (PEER-REVIEWED)

Shroyer, R., Washington, T., Emerick, M., & Bernstein, D., (July, 2022). *Robots in Science! Integrating Robotics and Computational Thinking into Middle School Classrooms*. Paper presented at the National Science Teachers Association, Chicago, IL.

Bernstein, D., Cassidy, M., Puttick, G., Shaw, F., Wendell, K., & Danahy, E. (March, 2022). *Designing Biomimetic Robots: Fostering Student Learning Across Multiple Disciplines*. Paper presented at the National Association for Research in Science Teaching, Vancouver, BC, Canada.

Cassidy, M., Bernstein, D., Puttick, G., Shaw, F., Wendell, K., & Danahy, E. (March, 2022). *Designing Biomimetic Robots: Examining Middle School Students' Knowledge in an Interdisciplinary Environment*. Paper presented at the National Association for Research in Science Teaching, Vancouver, BC, Canada.

Bernstein, D., Puttick, G., Cassidy, M., Wendell, K., Shaw, F., & Danahy, E. (June 2019). *Designing Biomimetic Robots: An Interdisciplinary Middle School Curriculum*. Poster presentation at the International Society for Technology in Education, Philadelphia, PA.

Bernstein, D., Puttick, G., Cassidy, M., Wendell, K., Danahy, E., & Shaw, F. (April, 2019). *Designing Biomimetic Robots to Support Multidisciplinary Engagement in Middle School*. Paper presentation at the National Association for Research in Science Teaching, Baltimore, MD.

Bernstein, D. (April, 2018). *Integrating Robotics Activities in Middle School Disciplinary Classrooms Supports Disciplinary Engagement*. Paper presented at the International Conference of the American Educational Research Association, New York.

Bernstein, D., Mutch-Jones, K., Cassidy, M., Hamner, E., & Cross, J. (April, 2016). *Robots and Romeo and Juliet: Studying Teacher Integration of Robotics into Middle School Curricula*. Paper presented at the International Conference of the American Educational Research Association, Washington, DC.

Bernstein, D., McKenney, S., Barber, J., Bopardikar, A., Drayton, B., Walkup, S., Pareja Roblin, N., & Schunn, C. (2014). *Design dimensions: In-depth retrospective studies of K-12 science curriculum design*. Poster presentation at the annual meeting of the International Society for Design and Development in Education (ISDDE), Cambridge, UK.

Puttick, G., & Bernstein, D. (2013). *Girls energy conservation corps: Study of a Girl Scout program focused on energy conservation*. Paper presented at the meeting of the National Association for Research in Science Teaching, San Juan, PR.

Bernstein, D., Puttick, G., & Hubbard, P. (April, 2012). *Seeding social norms about energy conservation among Girl Scouts*. Paper presented at the meeting of the American Educational Research Association, Vancouver, Canada.

Bernstein, D., & Hamner, E. (March, 2012). *Exploring the impact of family involvement on youth engagement in a creative robotics workshop*. Paper presented at the meeting of the National Association for Research in Science Teaching, Indianapolis, IN.

Bernstein, D. (2010). *Robot Diaries: Encouraging and enabling technological creativity*. Poster presented at the International Conference of the Learning Sciences, Chicago, IL.

Bernstein, D. (2010). *Exploring learning in educational robotics initiatives*. Invited talk at the AAAI Symposium on Using Robots to Promote Learning: Design and Evaluation.

Bernstein, D., & Crowley, K. (2009). *Can robots think for themselves? Identifying spaces for the exploration of children's ideas about robots*. Paper presented at The Reign of Catz and Dogz Workshop, Conference on Human Factors in Computing Systems (CHI), Boston.

Bernstein, D., Hamner, E., Lauwers, T., Nourbakhsh, I., & DiSalvo, C. (2008, March). *Robot Diaries: Investigating technological fluency in middle school girls*. In K. Crowley (Chair), *Thinking through the disciplines in informal and everyday settings: Ecology, art, robotics, and paleontology*. Symposium conducted at the meeting of the American Educational Research Association, New York.

Bernstein, D. (July, 2006). *Educational robotics and informal learning: How technology is changing how kids think*. Paper presented at the *Informal Learning Conference, Tokyo, Japan*.

Bernstein, D. & Crowley, K. (2005, April). *Investigating children's beliefs about artificially intelligent artifacts*. Poster presented at the meeting of the Society for Research in Child Development, Atlanta, GA.

Stubbs, K., Bernstein, D., Crowley, K., & Nourbakhsh, I. (2005, July). *Long-term human-robot interaction: The Personal Exploration Rover and museum docents*. Paper presented at the conference on Artificial Intelligence in Education, Amsterdam.

Bernstein, D. & Crowley, K. (2005, April). *Investigating children's beliefs about artificially intelligent artifacts*. Poster presented at the meeting of the Society for Research in Child Development, Atlanta, GA.

Bernstein, D. (2005, April). *Searching for signs of intelligent life: How experience impacts children's ideas about artificial intelligence*. In D. Shaffer (Chair), *Islands of Expertise and ARTS*:

Developing alternative routes to scientific understanding through informal and out-of-school learning experiences. Symposium conducted at the meeting of the National Association for Research in Science Teaching, Dallas, TX.

Bernstein, D. (2004, August). Parents, Docents and Robots: Examining Mediation at a Mars Rover Exhibit. In K. Crowley (Chair), *Islands of Expertise: An Approach to Exploring the Cognitive Ecology of Childhood*. Symposium conducted at the meeting of the Visitor Studies Association, Albuquerque, NM.

FUNDED FEDERAL GRANTS

Dovi, R., Bernstein, D., Berson, M., Franklin, K., Shank, P. (\$2,990,460; 07/01/2020-06/20/2024). An Interdisciplinary Approach to Supporting Computer Science in Rural Schools. Co-Principal Investigator.

Cassidy, M., Bernstein, D., & Puttick, G. (\$1,060,432; 08/01/2022-07/21/2025). Exploring the Integration of Systems Thinking in Biology in Participatory Professional Development. Co-Principal Investigator.

Bernstein, D., Cassidy, M., Cross, J., Mutch-Jones, K. (\$1,441,401; 10/01/2019-9/20/2023). Researching the Integration of Robotics into Middle School Physical Science Courses: Examining Instructional and Learning Outcomes. Principal Investigator.

Bernstein, D., Danahy, E., Puttick, G., Wendell, K., (\$1,198,780; 08/01/2017-07/31/2021). Designing Biomimetic Robots: Researching the Impact of an Interdisciplinary Bio-Engineering-Computational Design Curriculum on Middle School Engineering and Science Education. Principal Investigator.

Bernstein, D., & Mutch-Jones, K. (\$157,124; 12/01/2012-11/30/2017). BP: Collaborative Research: I-ECS: Inclusive Exploring CS Curriculum Enhancement as Face-to-Face and Online Support for Visually Impaired, High School students. Co-Principal Investigator.

Bernstein, D., & Drayton, B. (\$577,852; 09/15/2013-08/31/2017). Collaborative Research: Understanding and Improving Curriculum Materials Design Practices for Effective 'Large Scale' Implementation in Science. Principal Investigator.

Bernstein, D. (\$64,489; 02/15/2012-07/31/2013). Collaborative Research: Planning Grant: Computer Science for All (CS4ALL). Co-Principal Investigator.

PROFESSIONAL ACTIVITIES

- Journal peer reviewer: *Educational Technology Research & Development*, *International Journal of STEM Education*, *Journal of the Learning Sciences*, *Journal of Engineering Education*, *Journal of Research on Technology in Education*, *Visitor Studies*
- Proposal reviewer for the National Science Foundation, Education and Human Resources
- Organizational Memberships: American Educational Research Association, National Association for Research in Science Teaching, International Society for Technology in

Education, National Science Teachers Association, International Society of the Learning Sciences (member and meeting reviewer)

- Dissertation Committee Member, University of Twente, Netherlands
- Project advisory board member, *Positioning Youth for Success in Science: Studying the Malleability and Impact of Computational Thinking for Science* (PI: Rena Dorph)