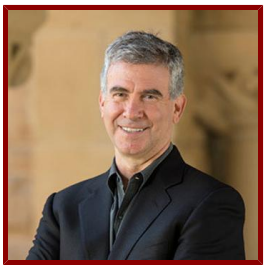
Stanford



Daniel Schwartz

Olivier Professor of Educational Technology

Graduate School of Education

Curriculum Vitae available Online

CONTACT INFORMATION

- **Admin. Support**

  Amy Schaumburg

  Email aschaum@stanford.edu

Bio

BIO

Daniel L. Schwartz is the Nomellini & Olivier Professor of Educational Technology at Stanford Graduate School of Education. He is also the Halper Family Faculty Director of the Stanford Accelerator for Learning, a major university-wide interdisciplinary initiative advancing the science and design of learning to bring effective and equitable solutions to the world. An expert in human learning and educational technology, Schwartz also oversees a laboratory that creates pedagogy, technology, and assessments that prepare students to continue learning and adapting throughout their lifetimes. He has taught math in rural Kenya, English in south-central Los Angeles and multiple subjects in Kaltag, Alaska. He is author of "The ABCs of How We Learn: 26 Scientifically Proven Approaches, How They Work, and When to Use Them" and the co-host of the GSE podcast, "School's In."

ACADEMIC APPOINTMENTS

- Professor, Graduate School of Education
- Member, Bio-X
- Faculty Affiliate, Institute for Human-Centered Artificial Intelligence (HAI)
- Member, Wu Tsai Human Performance Alliance
- Member, Wu Tsai Neurosciences Institute

ADMINISTRATIVE APPOINTMENTS

- Halper Family Faculty Director, Stanford Accelerator for Learning, (2021- present)
- I. James Quillen Dean, Stanford Graduate School of Education, (2015-2026)
- Nomellini and Olivier Professor of Educational Technology, Stanford Graduate School of Education, (2014- present)
- Professor of Education, Stanford Graduate School of Education, (2000- present)

HONORS AND AWARDS

- Outstanding Young Teacher Award, Los Angeles, University of Southern California (1979)
- Advisor of the Year, Graduate School of Education (2011)
- Teacher of the Year, Graduate School of Education (2015)
- Sylvia Scribner Award, American Education Research Association (2015)

- Best Books of the Year, NPR (2016)
- Career Achievement Educational Psychology, American Psychology Association (2021)
- Klaus Jacobs Prize, Klaus Jacobs Foundation (2021)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Assistant and Associate Professor of Psychology and Human Development, Vanderbilt University (2018 - present)
- Programmer & Instructor in Lisp, C, & Assembler, . (2018 - present)
- Research Scientist, Learning Technology Center at Vanderbilt (2018 - present)
- Teacher of Mathematics, Kitiwanga Day School, Kitiwanga, Kenya (2018 - present)
- Teacher of Mathematics, Science, Reading and Language Arts, Kaltag Jr. & Sr. High Schools, Kaltag, AK (2018 - present)
- Teacher of Remedial Reading and Writing, John Muir Jr. High, Los Angeles, CA (2018 - present)

PROGRAM AFFILIATIONS

- Symbolic Systems Program

PROFESSIONAL EDUCATION

- PhD, Columbia University , Human Cognition and Learning (1992)
- MA, Columbia University , Computers and Education (1988)
- BA, Swarthmore College , Philosophy and Anthropology (1979)
- Teaching Certificate, University of Southern California (1981)

LINKS

- Webpage: http://AAALab.Stanford.Edu

Research & Scholarship

RESEARCH INTERESTS

- Artificial intelligence (AI)
- Assessment & Evaluation
- Cognitive Development
- Collaborative Learning
- Educational Neuroscience
- Embodied Cognition
- Human-Computer Interaction
- Learning Sciences
- Learning Technologies
- Mathematics Education
- STEM Education
- Science Education

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Instructional methods, transfer of learning and assessment, mathematical development, teachable agents, cognition, and cognitive neuroscience.

Publications

PUBLICATIONS

- **Sit Still or Move More? The Impact of Fidgeting on Creativity.** *Journal of educational psychology*
  Oppezzo, M., Schwartz, D. L., Aikens, R., Moore, J. B., Langford, J., Baiocchi, M., Gross, J. J., Dohmen, I.
  2025

- **A Work-Based, Fully Remote, and Peer-Supported Exercise Snack Behavior Change Intervention (MOV'D): Protocol for a Randomized Controlled Pilot Trial.** *JMIR research protocols*
  Monteiro, A., Moore, J., Aikens, R., Duckworth, A., Gross, J. J., Schwartz, D., Baiocchi, M., Prochaska, J. J., Oppezzo, M.
  2025; 14: e64455

- **Identifying features of field trips (FTs) that promote a connection to nature, culture, and other people** *JOURNAL OF ENVIRONMENTAL EDUCATION*
  Saavedra, A., Schwartz, D. L., Blair, K. P.
  2025

- **Achieving an adaptive learner** *EDUCATIONAL PSYCHOLOGIST*
  Schwartz, D. L.
  2025; 60 (1): 7-22

- **Extended Realities and the Future of Knowledge Work: Opportunities and Challenges**
  Queiroz, A. C. M., Bailenson, J. N., Blair, K., Schwartz, D. L., Thille, C., Wagner, A., IEEE COMPUTER SOC
  IEEE COMPUTER SOC.2024: 662-666

- **Moving outside the board room: A proof-of-concept study on the impact of walking while negotiating.** *PloS one*
  Oppezzo, M., Neale, M. A., Gross, J. J., Prochaska, J. J., Schwartz, D. L., Aikens, R. C., Palaniappan, L.
  2023; 18 (3): e0282681

- **Active learning: "Hands-on" meets "minds-on".** *Science (New York, N.Y.)*
  Yannier, N., Hudson, S. E., Koedinger, K. R., Hirsh-Pasek, K., Golinkoff, R. M., Munakata, Y., Doebel, S., Schwartz, D. L., Deslauriers, L., McCarty, L., Callaghan, K., Theobald, E. J., Freeman, et al
  2021; 374 (6563): 26-30

- **What moves you? Physical activity strategies in older women.** *Journal of health psychology*
  Oppezzo, M., Wegner, L., Gross, J. J., Schwartz, D. L., Eckley, T., King, A. C., Mackey, S., Stefanick, M. L.
  2021: 13591053211014593

- **Modeling and Analyzing Inquiry Strategies in Open-Ended Learning Environments** *INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE IN EDUCATION*
  Kaeser, T., Schwartz, D. L.
  2020; 30 (3): 504-535

- **The relation between academic achievement and the spontaneous use of design-thinking strategies** *COMPUTERS & EDUCATION*
  Cutumisu, M., Schwartz, D. L., Lou, N.
  2020; 149

- **A digital game-based assessment of middle-school and college students' choices to seek critical feedback and to revise** *BRITISH JOURNAL OF EDUCATIONAL TECHNOLOGY*
  Cutumisu, M., Chin, D. B., Schwartz, D. L.
  2019; 50 (6): 2977-3003

- **Educating and Measuring Choice: A Test of the Transfer of Design Thinking in Problem Solving and Learning** *JOURNAL OF THE LEARNING SCIENCES*
  Chin, D. B., Blair, K. P., Wolf, R. C., Conlin, L. D., Cutumisu, M., Pfaffman, J., Schwartz, D. L.
  2019; 28 (3): 337-380

- **The impact of critical feedback choice on students' revision, performance, learning, and memory** *COMPUTERS IN HUMAN BEHAVIOR*
  Cutumisu, M., Schwartz, D. L.

2018; 78: 351–67

- **Adaptive Natural-Language Targeting for Student Feedback**
  Kolchinski, Y., Ruan, S., Schwartz, D., Brunskill, E., ACM
  ASSOC COMPUTING MACHINERY.2018

- **Assessing Whether Students Seek Constructive Criticism: The Design of an Automated Feedback System for a Graphic Design Task** *INTERNATIONAL JOURNAL OF ARTIFICIAL INTELLIGENCE IN EDUCATION*
  Cutumisu, M., Blair, K. P., Chin, D. B., Schwartz, D. L.
  2017; 27 (3): 419–47

- **Got Game? A Choice-Based Learning Assessment of Data Literacy and Visualization Skills** *TECHNOLOGY KNOWLEDGE AND LEARNING*
  Chin, D. B., Blair, K. P., Schwartz, D. L.
  2016; 21 (2): 195-210

- **A comparison of two methods of active learning in physics: inventing a general solution versus compare and contrast** *INSTRUCTIONAL SCIENCE*
  Chin, D. B., Chi, M., Schwartz, D. L.
  2016; 44 (2): 177-195

- **Preparation for future learning: a missing competency in health professions education?** *MEDICAL EDUCATION*
  Mylopoulos, M., Brydges, R., Woods, N. N., Manzone, J., Schwartz, D. L.
  2016; 50 (1): 115-123

- **The ABCs of how we learn: 26 scientifically proven approaches, how they work, and when to use them**
  Schwartz, D. L., Tsang, J. M., Blair, K. P.
  WW Norton & Company.2016

- **Learning to "See" Less Than Nothing: Putting Perceptual Skills to Work for Learning Numerical Structure** *COGNITION AND INSTRUCTION*
  Tsang, J. M., Blair, K. P., Bofferding, L., Schwartz, D. L.
  2015; 33 (2): 154-197

- **Seeking the General Explanation: A Test of Inductive Activities for Learning and Transfer** *JOURNAL OF RESEARCH IN SCIENCE TEACHING*
  Shemwell, J. T., Chase, C. C., Schwartz, D. L.
  2015; 52 (1): 58-83

- **Seeking the general explanation: A test of inductive activities for learning and transfer** *Journal of Research in Science Teaching*
  Shemwell, J. T., Chase, C. C., Schwartz, D. L.
  2015; 52 (1): 58-83

- **Posterlet: A game-based assessment of children's choices to seek feedback and to revise** *Journal of Learning Analytics*
  Cutumisu, M., Blair, K. P., Chin, D. B., Schwartz, D. L.
  2015; 2 (1): 49-71

- **Learning to “see” less than nothing: Putting perceptual skills to work for learning numerical structure** *Cognition and Instruction*
  Tsang, J. M., Blair, K. P., Bofferding, L., Schwartz, D. L.
  2015; 33 (2): 154-197

- **Experience and Explanation: Using Videogames to Prepare Students for Formal Instruction in Statistics** *JOURNAL OF SCIENCE EDUCATION AND TECHNOLOGY*
  Arena, D. A., Schwartz, D. L.
  2014; 23 (4): 538-548

- **Give Your Ideas Some Legs: The Positive Effect of Walking on Creative Thinking** *JOURNAL OF EXPERIMENTAL PSYCHOLOGY-LEARNING MEMORY AND COGNITION*
  Oppezzo, M., Schwartz, D. L.
  2014; 40 (4): 1142-1152

- **A pragmatic perspective on visual representation and creative thinking** *VISUAL STUDIES*
  Martin, L., Schwartz, D. L.

2014; 29 (1): 80-93

- **Give your ideas some legs: The positive effect of walking on creative thinking.** *Journal of experimental psychology: learning, memory, and cognition*
  Oppezzo, M., Schwartz, D. L.
  2014; 40 (4): 1142
- **Experience and explanation: Using videogames to prepare students for formal instruction in statistics** *Journal of Science Education and Technology*
  Arena, D. A., Schwartz, D. L.
  2014; 23 (4): 538-548
- **Learning by Teaching Human Pupils and Teachable Agents: The Importance of Recursive Feedback** *JOURNAL OF THE LEARNING SCIENCES*
  Okita, S. Y., Schwartz, D. L.
  2013; 22 (3): 375-412
- **Young Children Can Learn Scientific Reasoning with Teachable Agents** *IEEE TRANSACTIONS ON LEARNING TECHNOLOGIES*
  Chin, D. B., Dohmen, I. M., Schwartz, D. L.
  2013; 6 (3): 248-257
- **Applying Cognitive Developmental Psychology to Middle School Physics Learning: The Rule Assessment Method** *Physics Education Research Conference on Cultural Perspectives on Learners' Performance and Identity in Physics*
  Hallinen, N. R., Chi, M., Chin, D. B., Prempeh, J., Blair, K. P., Schwartz, D. L.
  AMER INST PHYSICS.2013: 158–161
- **Learning by teaching human pupils and teachable agents: The importance of recursive feedback** *Journal of the Learning Sciences*
  Okita, S. Y., Schwartz, D. L.
  2013; 22 (3): 375-412
- **How Perception and Culture Give Rise to Abstract Mathematical Concepts in Individuals** *International handbook of research on conceptual change*
  Blair, K. P., Tsang, I. M., Schwartz, D. L.
  2013: 322
- **A behavior change perspective on self-regulated learning with teachable agents** *International handbook of metacognition and learning technologies*
  Oppezzo, M., Schwartz, D. L.
  Springer.2013: 485–500
- **Measuring what matters most: Choice-based assessments for the digital age**
  Schwartz, D. L., Arena, D.
  MIT Press.2013
- **Beyond natural numbers: negative number representation in parietal cortex** *FRONTIERS IN HUMAN NEUROSCIENCE*
  Blair, K. P., Rosenberg-Lee, M., Tsang, J. M., Schwartz, D. L., Menon, V.
  2012; 6
- **Resisting Overzealous Transfer: Coordinating Previously Successful Routines With Needs for New Learning** *EDUCATIONAL PSYCHOLOGIST*
  Schwartz, D. L., Chase, C. C., Bransford, J. D.
  2012; 47 (3): 204-214
- **A value of concrete learning materials in adolescence.** *The adolescent brain: Learning, reasoning, and decision making*
  Blair, K. P., Schwartz, D. L.
  American Psychological Association.2012
- **How to build educational neuroscience: Two approaches with concrete instances** *BJEP Monograph Series II, Number 8-Educational Neuroscience*
  Schwartz, D. L., Blair, K. F., Tsang, J. J.
  British Psychological Society.2012: 9–27

- **The mental representation of integers: An abstract-to-concrete shift in the understanding of mathematical concepts** *COGNITION*
  Varma, S., Schwartz, D. L.
  2011; 121 (3): 363-385
- **Practicing Versus Inventing With Contrasting Cases: The Effects of Telling First on Learning and Transfer** *JOURNAL OF EDUCATIONAL PSYCHOLOGY*
  Schwartz, D. L., Chase, C. C., Oppezzo, M. A., Chin, D. B.
  2011; 103 (4): 759-775
- **Prototyping Dynamics: Sharing Multiple Designs Improves Exploration, Group Rapport, and Results**
  Dow, S. P., Fortuna, J., Schwartz, D., Altringer, B., Schwartz, D. L., Klemmer, S. R., ACM
  ASSOC COMPUTING MACHINERY.2011: 2807–16
- **Practicing versus inventing with contrasting cases: The effects of telling first on learning and transfer.** *Journal of Educational Psychology*
  Schwartz, D. L., Chase, C. C., Oppezzo, M. A., Chin, D. B.
  2011; 103 (4): 759
- **Parallel Prototyping Leads to Better Design Results, More Divergence, and Increased Self-Efficacy** *ACM TRANSACTIONS ON COMPUTER-HUMAN INTERACTION*
  Dow, S. P., Glassco, A., Kass, J., Schwarz, M., Schwartz, D. L., Klemmer, S. R.
  2010; 17 (4)
- **Preparing students for future learning with Teachable Agents** *ETR&D-EDUCATIONAL TECHNOLOGY RESEARCH AND DEVELOPMENT*
  Chin, D. B., Dohmen, I. M., Cheng, B. H., Oppezzo, M. A., Chase, C. C., Schwartz, D. L.
  2010; 58 (6): 649-669
- **Teachable Agents and the Protege Effect: Increasing the Effort Towards Learning** *JOURNAL OF SCIENCE EDUCATION AND TECHNOLOGY*
  Chase, C. C., Chin, D. B., Oppezzo, M. A., Schwartz, D. L.
  2009; 18 (4): 334-352
- **Spatial Learning and Computer Simulations in Science** *INTERNATIONAL JOURNAL OF SCIENCE EDUCATION*
  Lindgren, R., Schwartz, D. L.
  2009; 31 (3): 419-438
- **Prospective Adaptation in the Use of External Representations** *COGNITION AND INSTRUCTION*
  Martin, L., Schwartz, D. L.
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- **How should educational neuroscience conceptualise the relation between cognition and brain function? Mathematical reasoning as a network process** *EDUCATIONAL RESEARCH*
  Varma, S., Schwartz, D. L.
  2008; 50 (2): 149-161
- **Scientific and Pragmatic Challenges for Bridging Education and Neuroscience** *EDUCATIONAL RESEARCHER*
  Varma, S., McCandliss, B. D., Schwartz, D. L.
  2008; 37 (3): 140-152
- **Using hidden Markov models to characterize student behaviors in learning-by-teaching environments** *9th International Conference on Intelligent Tutoring Systems*
  Jeong, H., Gupta, A., Roscoe, R., Wagster, J., Biswas, G., Schwartz, D.
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- **Bringing CBLEs into classrooms: Experiences with the Betty's Brain system** *8TH IEEE INTERNATIONAL CONFERENCE ON ADVANCED LEARNING TECHNOLOGIES, PROCEEDINGS*
  Wagster, J., Kwong, H., Segedy, J., Biswas, G., Schwartz, D.
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- **Instrumentation in learning research**
  Sears, D. A., Schwartz, D. L.
  edited by Hsu, L., Henderson, C., McCullough, L.

AMER INST PHYSICS.2007: 15-+

- **Young children's understanding of animacy and entertainment robots** *INTERNATIONAL JOURNAL OF HUMANOID ROBOTICS*
  Okita, S. Y., Schwartz, D. L.
  2006; 3 (3): 393-412
- **Physically distributed learning: adapting and reinterpreting physical environments in the development of fraction concepts.** *Cognitive science*
  Martin, T., Schwartz, D. L.
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- **Learning by teaching: A new agent paradigm for educational software** *APPLIED ARTIFICIAL INTELLIGENCE*
  Biswas, G., Leelawong, K., Schwartz, D., Vye, N., Teachable Agents Grp Vanderbilt
  2005; 19 (3-4): 363-392
- **How Mathematics Propels the Development of Physical Knowledge** *JOURNAL OF COGNITION AND DEVELOPMENT*
  Schwartz, D. L., Martin, T., Pfaffman, J.
  2005; 6 (1): 65-88
- **Exploring young children's attributions through entertainment robots**
  Okita, S. Y., Schwartz, D. L., Shibata, T., Tokuda, H., IEEE
  IEEE.2005: 390-395
- **Designs for knowledge evolution: Towards a prescriptive theory for integrating first- and second-hand knowledge** *Symposium on Cognition, Education and Communication Technology*
  Schwartz, D. L., Martin, T., Nasir, N.
  LAWRENCE ERLBAUM ASSOC PUBL.2005: 21–54
- **Inventing to prepare for future learning: The hidden efficiency of encouraging original student production in statistics instruction** *COGNITION AND INSTRUCTION*
  Schwartz, D. L., Martin, T.
  2004; 22 (2): 129-184
- **Milo and J-mole: Computers as constructivist teachable agents** *6th International Conference of the Learning Sciences*
  Blair, K. P., Schwartz, D. L.
  LAWRENCE ERLBAUM ASSOC PUBL.2004: 588–588
- **Developing learning by teaching environments that support self-regulated learning** *7th International Conference on Intelligent Tutoring Systems*
  Biswas, G., Leelawong, K., Belynne, K., Viswanath, K., Schwartz, D., Davis, J.
  SPRINGER-VERLAG BERLIN.2004: 730–740
- **Tool use and the effect of action on the imagination** *JOURNAL OF EXPERIMENTAL PSYCHOLOGY-LEARNING MEMORY AND COGNITION*
  Schwartz, D. L., Holton, D. L.
  2000; 26 (6): 1655-1665
- **Learning as coordination: Cognitive psychology and education** *Handbook of educational psycholog*
  Schwartz, D.
  2016
- **Prototyping dynamics: sharing multiple designs improves exploration, group rapport, and results** *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*
  Schwartz, D.
  2011