




## Daniel Schwartz

Dean of the Graduate School of Education and the Nomellini-Olivier Professor of Educational Technology

 Curriculum Vitae available Online

### CONTACT INFORMATION

- **Admin. Support**

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### Bio

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#### BIO

Daniel L. Schwartz is the I. James Quillen Dean and Nomellini & Olivier Professor of Educational Technology at Stanford Graduate School of Education. He leads Stanford's Transforming Learning Accelerator, a major 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. As co-host of the Stanford podcast and SiriusXM radio show School's In, Schwartz discusses current topics in teaching and learning with an aim of helping educators and parents understand and use the latest research. He is author of *The ABCs of How We Learn: 26 Scientifically Proven Approaches, How They Work, and When to Use Them*.

#### ACADEMIC APPOINTMENTS

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

#### ADMINISTRATIVE APPOINTMENTS

- Professor of Education, Stanford Graduate School of Education, (2000- present)
- I. James Quillen Dean, Stanford Graduate School of Education, (2015- present)

#### 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

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### RESEARCH INTERESTS

- Assessment, Testing and Measurement
- Brain and Learning Sciences
- Data Sciences
- Psychology
- Technology and Education

### CURRENT RESEARCH AND SCHOLARLY INTERESTS

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

### PROJECTS

- Research on the benefits of informal learning for subsequent school-based instruction
- Serving on the National Academy of Sciences committee to write How People Learn II
- Designing Contrasting Cases for Inductive Learning (2014 - 2017)

## Teaching

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### COURSES

#### 2020-21

- Introduction to Statistical Methods in Education: EDUC 400A (Aut)

#### 2019-20

- Introduction to Statistical Methods in Education: EDUC 400A (Aut)

#### 2018-19

- Introduction to Statistical Methods in Education: EDUC 400A (Aut)

#### 2017-18

- Introduction to Statistical Methods in Education: EDUC 400A (Aut)

### STANFORD ADVISEES

#### Doctoral Dissertation Reader (AC)

Glenn Davis, Xavier Monroe

**Doctoral Dissertation Advisor (AC)**

Ana Saavedra

**Doctoral (Program)**

Ethan Roy, Ana Saavedra

**Publications**

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**PUBLICATIONS**

- **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
- **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
- **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 as coordination: Cognitive psychology and education** *Handbook of educational psycholog*  
Schwartz, D.  
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

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- **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** *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*  
Schwartz, D.  
2011
- **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
- **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
- **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.  
2009; 27 (4): 370-400
- **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.  
SPRINGER-VERLAG BERLIN.2008: 614–625
- **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.

2008: 252-?

- **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
- **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
- **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., Belyne, 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