

ANDREW J. VAN SCHAACK

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EDUCATION

- May 2006 **Ph.D., Instructional Technology**
Utah State University, Logan, Utah
Dissertation: “The Effects of an Electronic Flashcard System Incorporating a Modified Constant Time Delay Protocol with Incremental Rehearsal and Expanding Retrieval Review on Paired-Associate Learning”
Chair: Dr. David A. Wiley; Honorary Co-Chair: Dr. M. David Merrill
- May 2002 **B.S., Interdisciplinary Studies: Instructional Psychology**
Utah State University, Logan, Utah

RESEARCH INTERESTS

My general interest is in the development and dissemination of effective, efficient, and accessible instructional technologies (products and practices) based on empirically-validated scientific research.

AWARDS & FELLOWSHIPS

- April 2012 David Schleyer Faculty Award (for outstanding student mentoring), Vanderbilt University
April 2004 Leadership Award, ISPI Student Chapter, Utah State University
Aug 2003 Vice President of Research Fellowship, Utah State University
April 2002 Instructor of the Year, Department of Instructional Technology, Utah State University

PUBLICATIONS

Papers

- Landau, S., Bourquin, E., Miele, J., & Van Schaack, A. J. (September, 2008). Demonstration of a universally accessible audio-haptic transit map built on a digital pen-based platform. *Proceedings of the Third International Workshop on Haptic and Audio Interaction Design*, Jyväskylä, Finland.
- Gur, B. S., & Van Schaack, A. J. (2004). Approaches to assessment of online learning: Conceptual challenges. *Proceedings of the 8th International Computer Assisted Assessment Conference*, Loughborough University, United Kingdom, 127-135.

Books & Book Chapters

- Merrill, M. D., Van Schaack, A. J., & Barclay, M. (2007). Fundamental instructional strategies: First principles of instructional design. In M. Spector (Ed.), *Handbook of Research on Educational Communications and Technology* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates.
- Spector, J. M., Ohrazda, C., Van Schaack, A. J., & Wiley, D. A. (2005). *Innovations in instructional technology*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Van Schaack, A. J., & Ohrazda, C. (2005). The Role of Mentoring: Slaying Dragons—An interview with Dr. Merrill. In M. Spector, C. Ohrazda, A. J. Van Schaack, and D. A. Wiley (Eds.), *Innovations in Instructional Design* (pp. 291-301). Mahwah, NJ: Lawrence Erlbaum Associates.

Patents Granted

- Edgecomb, T. C., Van Schaack, A., Marggraff, J., & Meyyappan, V. (U.S. Patent 8,265,382). *Electronic annotation of documents with preexisting content.*
- Marggraff, J. Edgecomb, T. A., & Van Schaack, A. (U.S. Patent 8,194,081). *Animation of audio ink.*
- Meyyappan, V., Marggraff, J., Edgecomb, T. C., & Van Schaack, A. (8,37,4992). *Organization of user generated content captured by a smart pen computing system.*
- Van Schaack, A. J., Burstrom, S., & Marggraff, J. L. (U.S. Patent 7,810,730). *Decoupled applications for printed material.*
- Van Schaack, A., Canova, F., Connell, B., & Lewis, R. (U.S. Patent 8,254,605). *Binaural recording for smart pen computing systems.*
- Van Schaack, A., & Marggraff, J. (U.S. Patent 8,284,951). *Enhanced audio recording for smart pen computing systems.*
- Van Schaack, A. J., & Smith Lewis, A. (U.S. Patent 6,652,283). *A system, apparatus, and method to maximize the effectiveness and efficiency of learning, retaining, and retrieving knowledge and skills.*

Patent Applications Under Examination

- Black, D. R., Halle, B., & Van Schaack, A. J. (Pending as 61719292). *Interactive digital workbook using smart pens.*
- Black, D. R., Halle, B., & Van Schaack, A. J. (Pending as 61719290). *Correlation of written notes to digital content.*
- Black, D. R., Halle, B., & Van Schaack, A. J. (Pending as 61719298) *Multi-user collaboration with a smart pen system.*
- Black, D. R., Halle, B., & Van Schaack, A. J. (Pending as 61719291). *Digital cursor display linked to a smart pen.*
- Edgecomb, T. C., & Van Schaack, A. (WO 2012/162415). *Content selection in a pen-based computing system.*
- Edgecomb, T. C., Van Schaack, A., & Marggraff, J. (Allowed as 60940669). *Customer authoring tool for creating user-generated content for smart pen applications.*
- Van Schaack, A., & Marggraff, J. (Pending as 61042196). *Digital bookclip.*
- Van Schaack, A., & Marggraff, J. (Allowed as 60940665). *Multi-modal smartpen computing system.*

PRESENTATIONS

- Van Schaack, A. (April 2012). *The research basis for electronic educational texts.* Inkling Forum: Digital Learning and the Future of Textbooks. University of San Diego, School of Leadership and Education Sciences.
- Van Schaack, A. (January, 2012). *Applications of Digital Pen Technologies in Higher Education.* HigherEdTECH Summit at the Consumer Electronics Show: Las Vegas, Nevada.
- Van Schaack, A., Akian, B., & Weisburgh, M. (November, 2010). *From research to revenue: Turning a great idea into a product or new business.* SIIA EdTech Business Forum: New York City.
- Van Schaack, A. J. (November 2010). *The digital age: Teaching and learning using innovative learning technologies.* The 23rd Annual Georgia Educational Technology Conference: Atlanta, Georgia.
- Moore, S., Van Schaack, A., & Groves, J. (October, 2010). *Electronic inking without the tablet: Instructional applications and findings on use of the Livescribe smartpen.* IEEE Frontiers in Education Conference: Arlington, Virginia.
- Jordan, R., Van Schaack, A., & Bower, H. (October, 2010). *Notetaking with Livescribe: Access technology that makes a difference.* California Association for Postsecondary Education and Disability. San

- Jose, California.
- Hasselbring, T., Van Schaack, A., & Shrago, J. (July 2010). *Practical implementation of technology to impact instruction*. Invited presentation at the ERDI Superintendent Technology Conference. Vanderbilt University: Nashville, Tennessee.
- Van Schaack, A. J. (April, 2010). *Smartpen technologies for the blind: Low-cost, audio-tactile graphics and devices*. 2010 Council for Exceptional Children Conference: Nashville, Tennessee.
- Van Schaack, A. J. (February, 2010). *Technology-based solutions in multicultural classrooms*. Invited presentation at the 2010 Conference on Technology and Multiculturalism: University of Haifa, Israel.
- Van Schaack, A. J. (November, 2009). *The best of both educational worlds: Bridging the paper and digital divide*. Invited presentation at The International Symposium of the Joint Graduate School in the Science of School Education. Hyogo University of Teacher Education: Osaka, Japan.
- Van Schaack, A. J. (June, 2009). *Success for the dyslexic student through assistive technologies*. Dyslexia & Creativity: New research and implications: Yale University: New Haven, Connecticut.
- Van Schaack, A. J., and Miele, J. (June, 2009). *Innovations in STEM education for blind undergraduates using digital pen-based audio/tactile graphics*. Poster and presentation at 2009 NSF Joint Annual Meeting: Washington, D.C.
- Miele, J., & Van Schaack, A. J. (March, 2008). *Audiotactile graphics using mainstream smartpen technology: A new approach with enormous potential*. Paper presented at the CSUN International Conference on Technology and Persons with Disabilities: Los Angeles, California.
- Van Schaack, A. J. (February & April 2003). *Patents as a consideration in tenure and promotion*. Invited presentations to the Utah State University Research Council and to the Department Heads.
- Van Schaack, A. J. (January, 2003). *The U.S. patent database: A valuable research resource for instructional technologists*. Invited presentation for graduate students and faculty at Brigham Young University: Provo, Utah.
- Van Schaack, A. J. (January, 2003). *Practical advice for literature searches*. Invited presentation for faculty and graduate students at Utah State University: Logan, Utah.
- Van Schaack, A. J. (November, 2003). *Authorship: Determining credit and responsibility for faculty-student authored publication*. Invited presentation for faculty and graduate students at Utah State University: Logan, Utah.
- Spector, J. M., Wiley, D. A., Ohrazda, C., & Van Schaack, A. J. (October, 2003). *Questioning Merrill: Constructing the future of instructional science and technology*. Presidential Panel Session at the annual meeting of the Association for Educational Communications and Technology: Anaheim, California.
- Slocum, T. A., Stenhoff, D., & Van Schaack, A. J. (August, 2003). *Direct instruction: A model for educational research, application, and continuous improvement*. A keynote presentation at the 15th Annual Instructional Technology Institute: Logan, Utah.
- Van Schaack, A. J., Richards, J., & Loewer, A. (August, 2003). *A virtual field trip via real-time remote video broadcast*. Concurrent session at the 15th Annual Instructional Technology Institute: Logan, Utah.
- Van Schaack, A. J. (April, 2003). *Intellectual property: Your rights and obligations*. Invited presentation for a Graduate Student Seminar at Utah State University: Logan, Utah.

MEDIA MENTIONS

Print

- Cayman Islands Chamber of Commerce Quarterly Review (2013). *Caledonian's Money Smarts programme makes finance fun*. Retrieved from <http://goo.gl/V899WX>

The Tennessean. (November 5, 2011). *Nashville school takes students off the digital grid*.
<http://www.tennessean.com/article/20111105/NEWS/310290099/Nashville-school-takes-students-off-digital-grid>

New York Times Magazine. (September 16, 2010). *The pen that never forgets*.
<http://www.nytimes.com/2010/09/19/magazine/19Livescribe-t.html?pagewanted=all>

Photonics Spectra (February, 2008). *This pen is a real pal*.
<http://www.photonics.com/content/spectra/2008/February/peregrinations/90593.aspx>

Television

Cayman 27 Daybreak Interview (July 9, 2013). *Money Smarts*. Retrieved from
<http://www.cayman27.com.ky/2013/07/09/money-smarts>

Cayman 27 Evening Broadcast (June 28, 2013). *Gift for learning how to use money wisely*. Retrieved from
<http://www.cayman27.com.ky/2013/06/28/gift-for-learning-how-to-use-money-wisely>

Video Broadcasts

IEEE-USA / Discoveries and Breakthroughs in Science (May, 2008). Smart pens help blind see.
<http://www.ivanhoe.com/science/story/2008/05/429a.html>

Vanderbilt University's VUCast News Network (December 2007). <http://www.youtube.com/watch?v=4N3-WKt9l6A>

Online News

United Press International (UPI). (December, 4, 2007). New smartpen to assist blind students.
http://www.upi.com/Science_News/2007/12/04/New_smartpen_to_assist_blind_students/UPI-31251196794195/

Science Daily (December 11, 2007). New smartpen and paper to help teach blind college students.
<http://www.sciencedaily.com/releases/2007/12/071203121438.htm>

TEACHING

Vanderbilt University **EDUC 2040: Introduction to Classroom Technologies (1 credit)**
 An introduction to various technologies used in classrooms with an emphasis on computer-based systems. Designed to meet State licensure requirements for teachers.

EDUC 3900: Design & Technology (3 credits)
 Graduate level course on the practical applications of scientific, experimentally-validated research on learning and memory to the development of instructional technologies. Students read and discuss primary research articles from the fields of behavioral psychology, cognitive psychology, and neuroscience and apply those principles to the design of technologies that support teaching and learning.

ENGM 275: Technology Assessment and Forecasting (3 credits)
 Methods of assessing technological changes in the social, political, ecological, economic, legal, and institutional environments. Students develop and write forecasts for decision makers using a variety of strategies including the Delphi Method, Monitoring, Normative Techniques, and Scenarios.

HOD1200: Understanding Organizations (3 credits)
 Introduction to theory and research on human behavior in organizations. Aimed at providing a framework for understanding the dynamics of organizations around the basic issues that confront all organizations (e.g., goal setting, work performance, leadership, decision making, and managing change).

HOD 1700: Systematic Inquiry (3 credits)

Introduction to qualitative and quantitative research methods, including identification of research problem, review and evaluation of literature, and design of research project.

HOD 2980: Judgment and Decision Making (3 credits)

Introduction to common decision making errors with an understanding of the cognitive, contextual, and emotional factors behind them. Students will develop strategies to prevent false judgments and irrational decisions in realistic settings. Students will receive training in the use of Microsoft Excel as a tool for decision making and they will complete the course with MOS Certification at the expert level.

MHPE 5520: Instructional Design and Strategies for Learning (3 credits)

A critical examination of various instructional designs and strategies that give students the opportunity to learn and practice to achieve the results desired from instruction.

MTED 2800: Computers, Teaching, and Mathematical Visualization (3 credits)

Examines the 7-14 mathematics curriculum as a body of ideas that students can develop over time and the use of computer environments to support the teaching and learning of them.

Utah State
University

INST 6800: Projects in Instructional Technology (2 credits)

INST 6800 and 6820 (see below) are the capstone courses of Utah State University's Instructional Technology master's program. In 6800, student teams select off-the-shelf educational products and analyze them to identify weaknesses in their instructional designs. The teams develop product improvement proposals targeted at the original manufacturers. Proposals include a product analysis, statement of work, return on investment analysis, schedule, and budget. All of the proposals in Spring 2002 were unsolicited and more than half were accepted and funded.

INST 6820: Design & Development Studio (6 credits)

INST 6820 is the companion course to INST 6800 where students carry out the proposed work. Emphasis is placed on contract negotiations, product development methods, project management, client relations, product evaluation, and post mortem project evaluation.

INST 7900: Independent Study Mentorship (3 credits)

Instruct, advise, and evaluate three international PhD-level students performing independent study research projects related to self-organizing learning communities.

INST 7960: Educational and Psychological Research Methods (3 credits)

Introduction to qualitative and quantitative research methods, including identification of research problem, review and evaluation of literature, and design of research project.

GRANTS

Awarded
January 2012

Enhanced Instructional Feedback Using Digital Pen Technologies

Investigator: Responsible for all aspects of the study including technology development, research design, data collection and analysis, and reporting/dissemination.

Peabody College Instructional Improvement Grant • 1 year duration beginning 1/12 • \$4,560

Classroom-based research has consistently shown that “the most powerful single moderator that enhances achievement is feedback.” Unfortunately, grading papers is recognized as “...the most stressful, most time consuming, and least rewarding activity in which professors

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engage.” The purpose of the study is to develop and validate a low-cost, easy-to-use digital pen that enables professors to provide handwritten and spoken feedback to their students in far less time than conventional approaches while improving overall quality.

Awarded
July 2010

Combining an Evidenced Based Treatment with a Measurement Feedback System

Investigator: Responsible for Livescribe Pulse technology components including software, training (materials and delivery), and data collection system.

NIH • 5 year duration beginning 1/10 • \$2,500,000

Evidence-based treatments (EBTs) have not reached their potential to improve the outcomes for clients in community mental health treatment settings. The proposed study tests whether adding a measurement feedback system (MFS) that provides feedback on the therapeutic process and outcomes, to an existing EBT that only measures model adherence, improves therapist behavior and ultimately youth/family outcomes. Data will be collected, in part, using the Livescribe Pulse digital pen.

Awarded
September 2007

Innovations in STEM Education for Blind Undergraduates Using Digital Pen-Based Audio/Tactile Graphics

Co-PI: Responsible for technology development, qualitative and quantitative research design, building/maintaining project website, and commercialization through tech transfer NSF • 3 year duration beginning 9/07 • \$300,000

Limited access to graphical materials has long been a problem facing blind and visually impaired students, particularly in STEM (science, technology, engineering, and mathematics) classes. The primary goal of the project was to develop, evaluate, and disseminate a low-cost, portable, easy-to-use digital pen technology that enables blind undergraduate students and educational support personnel to create, explore, and understand the diagrams and figures common to the STEM curriculum using touch and sound.

Awarded
November 2003

Improving the Value and Sustainability of Open Education Programs

Project Director: Responsible for product definition, research, evaluation, PR, and legal William & Flora Hewlett Foundation / NSF • 2 year duration beginning 11/03 • \$1,035,000

Open Learning Support (OLS) is a partner with the OpenCourseWare (OCW) project at MIT. The OLS team built infrastructure to facilitate the development of informal, self-organizing learning communities around the OCW material.

UNIVERSITY SERVICE

Committees

2014–Present	College Halls Assessment Design Team
2012–Present	University Officer Education Advisory Committee
2012	Academic Honor Code Committee (Chair)
2011–Present	Faculty Advisor to AKPsi business fraternity
2010–2014	Humphrey Fellowship Program Mentor
2010–Present	Vanderbilt University Calendar Committee
2008–2013	Office of Undergraduate Admissions presentations: PreVU and Black & Gold Days
2008–2013	Peabody College presentations: Peabody Open House, Parents’ Weekend
2007–Present	Peabody College Small Grants Review Committee
2006–2013	Peabody College Curriculum Committee
2009	Fulbright Fellowship Program Mentor
2009	Bonsal Education Research Entrepreneurship Award (BEREA) Selection Committee
2005–2009	HOD Coordinating Committee

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2006 NCATE Certification: Secondary Education Math Report

Undergraduate Independent Study Projects

Fall 2014 Emily Grant
 Spring 2015 Samantha Garson, Elizabeth Mellgard
 Spring 2014 Ariel Altman, Andrew Greene, Nick Gravante, Gena Inbusch
 Fall 2013 Katherine Francis, Katherine Smith
 Spring 2012 Nick Gravante, Gena Inbusch, Amber Strohauer
 Fall 2012 Paige Cahill, Chelsea Pasfield, Jane Taylor
 Spring 2012 Maria Garpestad
 Fall 2011 Kevin Dunne, Caroline Tricoli
 Spring 2011 Rebecca Goldberg, Alex Hormozi, Will Parker Roe
 Fall 2010 Gillis Bernard, Daniel Newman, Michelle Olson, Emma Rogers, Katie Smietana, Lydia Vaughan, Mills Weinmann
 Spring 2010 Leya Edelstein, David Hecht, Ben Naturman, Jake Ryner, Devin Sullivan, Tyler Sanchez
 Fall 2008 Andrew Hart, Chris Hart, Ben Naturman, Tyler Sanchez,
 Spring 2008 Kimberly Conner, Larry Simmons, Andrew Smith, Lucy Watson, Jerry Yirenkyi,
 Fall 2007 Caroline Hickey, Rhymes Walton
 Spring 2007 Ur Barzel
 Fall 2006 Brian Mitchell, Kay Robinson
 Spring 2006 Liz Berey, Kristen Smietana, Brittany Thompson, Jon Torodash
 Spring 2005 Susan Hope, Jacob Wilson

Invited Presentations, Panels, Workshops, and Speeches

May 2014 *The Last Lecture* (Selected by Vanderbilt Senior Class to deliver final lecture of the year)
 December 2013 *Data Driven Decision Making at the Classroom Level* presentation (Tennessee/Shanghai Leadership Collaborative)
 August 2013 Honor Code Signing Ceremony faculty speaker
 February 2013 *Teaching Large Classes* panelist (Center for Teaching)
 February 2011 *Preventing Plagiarism and Teaching about Academic Discourse* panelist (Center for Teaching)
 2010 – Present *Introduction to Research Methods* workshop (Humphrey Fellows Program)
 2010 – Present *The Science and Technology of Teaching and Learning* workshop (Humphrey Fellows Program)

RELEVANT WORK EXPERIENCE

August 2004– Present	Vanderbilt University <i>Assistant Professor of the Practice</i> Department of Human and Organizational Development Department of Engineering Management Teach undergraduate courses in social science research methods, organizational psychology, and technology forecasting and assessment. Provide academic advising to undergraduate students	Nashville, TN
Sept. 2005– Present	Livescribe, Inc. <i>Senior Science Advisor</i> Provide empirical evidence to guide the design of software and hardware for the next generation of digital pen technologies. Since its launch in April 2008, the Pulse smartpen has	Oakland, CA

won multiple awards, including *Popular Science's Best of What's New 2008*, *Popular Mechanic's 2008 Breakthrough Award*, and *MacWorld's Best of Show* in 2009.

- Designed and developed product specifications and prototypes for an embedded display, a memorization tool, and an audio-enhanced college textbook using print-on-demand technology, and tablet emulation
- Contributed to the development of a binaural recording system, hardware industrial design, and system GUI
- Design and implement market research studies using qualitative and quantitative research methods
- Responsible for the design and implementation of research studies to demonstrate the efficacy of the technology for classroom instruction and use as a research tool
- Creator of 14 patented smartpen-related inventions

November 2003–
July 2003 **OSLO Research Group, Utah State University** Logan, UT
Project Director, Open Learning Support Project

Director of Research

Open Learning Support (OLS) is a partnership with the OpenCourseWare (OCW) project at the Massachusetts Institute of Technology. The OLS team has built infrastructure to facilitate the development of informal, self-organizing learning communities around the OCW materials. Funding for the project comes from The National Science Foundation and the William and Flora Hewlett Foundation. Partners include MIT, Apple Computer, Akamai, and Macromedia.

- Manage and direct the day-to-day efforts of eight graduate students
- Responsible for defining product features and functionality
- Develop strategies to define and the implement scholarly research
- Manage public relations and marketing
- Develop strategies to satisfy the competing intellectual property interests of Utah State University, the funding agencies, and the open source community

October 2001–
November 2003 **Office of Technology Commercialization, Utah State University** Logan, UT
Licensing Associate

The Office of Technology Commercialization is responsible for the protection, development, and commercialization of faculty inventions and creative works.

- Developed office standards for overall process flow and new opportunity evaluation
- Led faculty inventors through the entire process of intellectual property protection, market research, business development, promotion, and technology licensing
- Responsible for the management of all projects originating in the Colleges of Education and Humanities, Arts, and Social Sciences
- Responsible for the management of all software-related projects, University-wide
- Primary interface to three separate law firms and University representative to State Attorney General's Office in a patent infringement lawsuit

August 1997–
March 2001 **Smart.fm (formerly Cerego, Inc.)** Tokyo, Japan and San Francisco, CA
Co-Founder and Chief Scientist

Cerego is an educational software development company. It is currently the exclusive representative for Disney Asia Interactive for all of its education-related ventures.

- Inventor of core technology: "System, Apparatus, and Method to Maximize the Effectiveness and Efficiency of Learning, Retaining, and Retrieving Knowledge and Skills"—U.S. Patent No. 6,652,283
- Designed algorithms and user interface for proof-of-concept product used in outcomes research studies and investor presentations
- Managed R&D, Marketing, Product Development, and Outcomes Research groups

- Launched Silicon Valley office; recruited functional heads and staff
- Managed the design and implementation of research studies demonstrating the effectiveness, efficiency, and enjoyment of Cerego's learning products
- Delivered the "product pitch" in investor and analyst meetings leading to \$10 million in funding