ANDREW J. VAN SCHAACK

Work Contact Information
230 Appleton Place, Peabody #90
Nashville, TN 37023-5721
(615) 322-6780
andy.vanschaack@vanderbilt.edu

Home Contact Information
172 London Lane
Franklin, TN 37067
(615) 790-7638
andrewvs@mac.com

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.

PUBLICATIONS

Papers

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.

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.

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

Van Schaack, A., & Marggraff, J. (WO 2008/150909 A1, 2008). Multi-modal smartpen computing system.

Van Schaack, A., & Marggraff, J. (WO 2008/150916 A1, 2008). Enhanced audio recording for smart pen computing systems.

Meyyappan, V., Marggraff, J., Edgecomb, T. C., & Van Schaack, A. (WO 2008/150912 A1, 2008). Organization of user generated content captured by a smart pen computing system.

Van Schaack, A., Canova, F., Connell, B., & Lewis, R. (WO 2008/150918 A1, 2008). Binaural recording for smart pen computing systems.

Edgecomb, T. C., Van Schaack, A., Marggraff, J., & Meyyappan, V. (WO 2008/150919 A1, 2008). Electronic annotation of documents with preexisting content.

Edgecomb, T. C., Van Schaack, A., & Marggraff, J. (WO 2008/150923 A1, 2008). Customer authoring tool for creating user-generated content for smart pen applications.

Marggraff, J. Edgecomb, T. A., & Van Schaack, A. (WO 2008/150924 A1, 2008). Animation of audio ink.

Van Schaack, A. J., & Smith Lewis, A. (U.S. Patent 6,652,283, 2003). A system, apparatus, and method to maximize the effectiveness and efficiency of learning, retaining, and retrieving knowledge and skills.

PRESENTATIONS

Van Schaack, A. J. (November, 2009). The best of both educational worlds: Bridging the paper and digital divide. Invited presentation at the 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., 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.

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.

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.

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

Submitted February 2009

Digital Pen-Based Supports for Notetaking and Summarizing of Notes Among Students with Learning Disabilities in Gateway Postsecondary Science
Co-PI: *Responsible for Livescribe Pulse technology components and support for research design, data collection protocols, data analysis, and report-writing.*
NSF • 2 year duration beginning 9/09 • $200,000

Undergraduate science courses can be particularly difficult for students with learning disabilities because of the cognitive load imposed by their frequent reliance on multisyllabic vocabulary, complex chain of ideas, technically dense text-based pieces of information, and dependence on mathematical reasoning. Research indicates that effective notetaking is essential to postsecondary academic success. However, non-formal notetaking practices can produce notes that are incomplete and ineffectively organized. The primary goal of this research is to test the hypothesis that undergraduate students with learning disabilities will improve their understanding of focal science content when they use the Livescribe Pulse digital pen and paper to take and review lecture notes in conjunction with the Cornell Notetaking Sytem, a formal method of strategic notetaking.

Submitted
February 2009

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 9/09 • $2,500,000
Evidence-based treatments (EBTs) have not reached their potential to improve the outcomes for clients in community mental health treatment settings. There is a crisis in youth mental health services demanding innovative approaches for improving transportability, implementation, and outcomes of clinical treatments. 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. The use of these pens has several benefits over traditional paper and pencil measures that will enhance questionnaire completion, including (1) minimizing time from data collection to data entry; (2) eliminating the ongoing costs of data entry, paper, printing, and storage or the need for computer kiosks; (3) minimizing literacy problems through verbal presentation of questions; (4) increasing interest, particularly with youths, through its novelty; and (5) requiring completion before youth and caregiver leave the therapist's office.

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, and nowhere is this lack felt more severely than in STEM (science, technology, engineering, and mathematics) classes. The primary goal of the project is 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 will build infrastructure to facilitate the development of informal, self-organizing learning communities around the OCW material. EduCommons is a project to build software that enables distributed groups of people to collaborate on the design and development of open educational content.

RELEVANT WORK EXPERIENCE

August 2004–Present **Dept. of Human and Organizational Development, Vanderbilt University** Nashville, TN
Assistant Professor of the Practice
Teach undergraduate courses in the department of Human and Organizational Development. Provide academic advising to undergraduate students

September 2005–Present **Livescribe, Inc.** Oakland, CA
Senior Science Advisor
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 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
- 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

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 **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

PROFESSIONAL ASSOCIATIONS

- American Educational Research Association (AERA)
- American Psychological Association (APA)
- Association for Educational Communications and Technology (AECT)

REFERENCES

Dr. James Hogge
Associate Dean and Professor
Peabody College
Vanderbilt University; Nashville, TN
(615) 322-8501
j.hogge@vanderbilt.edu

Dr. Joseph Cunningham
Department Chair and Assoc. Professor
Human and Organizational Development
Vanderbilt University; Nashville, TN
(615) 322-2677
joe.cunningham@vanderbilt.edu

Dr. David Wiley
Associate Professor
Instructional Psychology & Technology
Brigham Young University; Provo, Utah
(801) 422-7071
david.wiley@byu.edu

Dr. Byron Burnham
Vice Provost and Dean Professor
School of Graduate Studies
Utah State University; Logan, Utah
(435) 797-1189
byron.burnham@usu.edu