

MATTHEW D. LAMMI

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EDUCATION

Utah State University	<i>Education-Engineering & Technology emphasis</i>	PhD, 2011
Utah State University	<i>Engineering and Technology Education</i>	MS, 2009
Brigham Young University	<i>Electronics Engineering Technology</i>	BS, 1999

Ph.D. Major Professor: Kurt Becker

Dissertation: Characterizing high school students' systems thinking in engineering design challenges through the Function-Behavior-Structure (FBS) framework

Masters Major Professor: Paul Schreuders

Thesis: Student achievement and affective traits in electrical engineering laboratories using traditional and computer-based instrumentation

RECENT PUBLICATIONS

Dixon, R., **Lammi, M.** (in press). Cognitive mapping in engineering design. *Journal of Technology Education*.

Lammi, M., Thornton, T. (in press). The cognitive processes and strategies of an expert and novice in the design of a wireless radio frequency network. *Journal of Technology Studies*.

Lammi, M., Becker, K. (2013). Engineering design thinking. *Journal of Technology Education*. 24(2), 55-77.

Schreuders, P., **Lammi, M.** (2012). Student attitude and achievement with computer-based instrumentation. *International Journal of Engineering Education*. 28(1), 1-10.

Lammi, M., Greenhalgh, S. (2011). Having fun with a 3D projectile. *Technology and Engineering Teacher*. ITEEA, 71(2), 11-16.

Lammi, M. (2010). The role of problem solving in engineering and technology education. *IEEE Multidisciplinary Engineering Education Magazine*. 5, 8-13.

SYNERGISTIC ACTIVITIES

Lammi, M., Denson, C. (2013, June). *Pre-service teachers' modeling as a way of thinking in engineering design*. Paper presented at the meeting of the American Society for Engineering Education, Atlanta, GA.

Ward, E., **Lammi, M.**, Branoff, T. (2013, March). *Success in engineering design: Student and teacher*, ITEEA Annual Conference, Columbus, OH.

Greenhalgh, S., **Lammi, M.**, Mativo, J. (2013, March). *But I don't have a degree in engineering*, ITEEA Annual Conference, Columbus, OH.

Thornton, T., **Lammi, M.** (2013, March). *Keeping it real: Demystifying engineering design*. North Carolina New Schools Scaling STEM Conference, Durham, NC.

- Begum, M., Demian, P., **Lammi, M.**, Hung, W. (2012, September). *A framework for investigating collaborative learning in engineering*. Paper presented at the International Conference on Innovation, Practice and Research in Engineering Education, Coventry, UK.
- Lammi, M.**, Branoff, T. (2012, June). *High school students' habits of mind and action in engineering design*. Paper presented at the meeting of the American Society for Engineering Education, San Antonio, TX.
- Lammi, M.** (2012, March). *High school students' systems thinking and other habits of mind and action in engineering design*. Presentation at the meeting of the International Technology and Engineering Education Association, Long Beach, CA.
- Lammi, M.**, Gero, J. (2011, October). *Comparing design cognition of undergraduate engineering students and high school pre-engineering students*. Paper presented at Frontiers in Education; Rapid City, SD.
- Lammi, M.** (2011, September). *High school students' habits of mind and action in engineering design challenges*. STEC Annual Conference; Boone, North Carolina.
- Lammi, M.** (2011, June). *Thinking in terms of systems through engineering design*. Paper presented at the meeting of the American Society for Engineering Education; Vancouver, Canada.
- Denson, C., **Lammi, M.**, Park, K., Dansie, E. (2010, June). *Methods for exploring engineering design thinking in high school student teams*. Paper presented at the meeting of the American Society for Engineering Education; Louisville, KY.
- Lammi, M.**, Greenhalgh, S., (2010, March). *STEM design challenge: Projectile design*. International Technology Education Association Conference; Charlotte, NC.
- Lammi, M.**, Mentzer, N., Park, K., Denson, C. (2010, March). *Student thinking in a STEM design challenge*. International Technology Education Association Conference; Charlotte, NC.
- Lammi, M.**, Schreuders, P. (2009, March). *Methods for collecting student achievement and affective traits with virtual instrumentation*. ASEE Rocky Mountain Regional Conference 2009, Orem, UT.
- Lammi, M.**, Belliston, W. (2008, November). *A compelling approach to an engineering technology service course for non-electrical engineering majors*. NAIT 2008 Annual Conference, Nashville, TN.

COLLABORATORS & AFFILIATIONS

Collaborators

Becker, Kurt	Utah State University
Begum, Marjahan	Loughborough University
Belliston, Ward	Utah State University
Branoff, Ted	North Carolina State University
Demian, Peter	Loughborough University
Denson, Cameron	North Carolina State University
Gero, John	George Mason University
Greenhalgh, Scott	Northern Iowa University
Holton, Doug	Utah State University
Hung, Woei	University of North Dakota
Mentzer, Nathan	Purdue University
Park, Kyung Suk	Utah State University
Paretti, Marie	Virginia Tech

Schreuders, Paul Utah State University
Williams, John Virginia Tech

Professional Affiliations

American Society for Engineering Education 2007 – present
Society of Hispanic Professional Engineers 2009 – present
International Technology & Engineering Education Association 2008 – present

ACADEMIC & PROFESSIONAL EXPERIENCE

Assistant Professor *North Carolina State University, Raleigh, NC* 07/11 – present

- Develop and execute research in engineering design
- Teach courses in STEM Education Department
 - TDE 331 Engineering Design
 - TDE 359 Electronics Technology
 - TED 594 Field-based Studies in STEM Education
 - TED 755 Implementing and Developing Technology Education
- Develop and submit research proposals
- Submitting articles to peer-reviewed journals

Post-doctoral Research Scholar *NCETE, Logan, UT* 12/10 – 07/11

- Develop research in engineering design challenges
- Submitting articles to peer-reviewed journals

Teaching/Research Assistant *Utah State University, Logan, UT* 7/07 – 12/10

- Developed and executed research in a collaborative groups studying student cognition and learning in engineering design
- Assisted with the development of proposal submissions to National Science Foundation
- Developed curriculum for electrical engineering courses
- Taught lectures and laboratories in the electrical engineering for non-majors course
- Developed and implemented innovative curriculum for electrical engineering course

Adjunct Instructor *ITT Tech, Sacramento, CA* 8/06 – 5/07

- Instructor of record for three courses in IT and EET: Analog Devices, Digital Communications, and Communications Cabling
- Participated in school retention initiatives
- Instructed students in lecture and laboratory setting

IT Manager *Avasoft, Sacramento, CA* 3/06 – 8/07

- Managed the operations of a start up business
- Managed all research and development, including two new product varieties
- Supervised the launch and maintenance of website and all other IT related programs

IT Project Manager *Sprint-Nextel*, Reston, VA 11/04 – 3/06

- Managed 800MHz Rebanding for engineering for one half of the US (\$4+ billion)
- Oversaw the development and launch of IT software programs (\$2million, \$400K)
- Supervised team and project for legal/engineering IT tool saving the company over \$200M
- Interpreted and developed documents between engineering, information technology, and legal teams

RF Engineer *T-mobile USA*, SLC, UT & NY, NY 9/00 – 10/04

- Performed overall engineering design and system performance in Utah and NY
- Performed and analyzed drive test; used propagation modeling software and decoded footprints from drive tests aiding in system design and optimization
- Performed various retunes and coordinated optimization and design for 2002 Olympics
- Created and maintained training and documentation for procedures and guidelines
- Developed and implemented software to trend system performance and indicate failures

Communications & Data Handling Engineer *Lockheed Martin*, Sunnyvale, CA 8/99 – 9/00

- Conducted and directed subsystem analysis and troubleshooting for satellite program
- Participated in initialization of new space satellite
- Developed and implemented software program to trend subsystems' performance
- Developed and assisted in documentation and training

GRANTS AND FELLOWSHIPS

- NC DPI 21stCCLC, \$1,360,000
- NSF REE Collaborative Grant, \$430,000
- NCETE Doctoral Research Grant, \$10,000
- Loughborough University ESC Grant, £3,500
- Workshop Grant: International Symposium on Engineering Education, Loughborough, UK, \$3,000

ACHIEVEMENTS

- ITEEA 21st Century Leadership Academy 2012
- ITEEA Donald Maley Spirit of Excellence Outstanding Graduate Student 2010
- USU Graduate Student Senate Scholarship 2010 - \$4,000
- Reviewer for IEEE Multidisciplinary Engineering Education Magazine

SKILLS

- SPSS, R, Excel
- Microsoft Office
- Programming in Visual Basic, C, Assembly
- Fluent in Spanish