

Jill Ann Marshall
The University of Texas, Austin
Department of Curriculum and Instruction
STEM Education Program
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Education

B.S. Physics, with honors, Stanford University, 1980
Ph.D. Physics, The University of Texas at Austin, 1984

Professional Chronology

2013- Associate Professor (courtesy appointment), Department of Physics, University of Texas Austin.
2012-13 Interim Co-Director, UTeach Natural Sciences Teacher Preparation Program
2010-present Associate Co-Director, UTeach Natural Sciences Teacher Preparation Program
2009- Associate Professor, STEM Education, Department of Curriculum and Instruction, University of Texas, Austin
2002-08 Assistant Professor, Science and Mathematics Education, Department of Curriculum and Instruction, University of Texas, Austin
2001-02 Assistant Director, Systemic Research Collaborative for Education in Mathematics, Science and Technology, University of Texas, Austin.
1998-01 Associate Professor, Department of Physics, Utah State University
1994-98 Assistant Professor, Department of Physics, Utah State University
1987-94 Manager, Sensor Design and Calibration Section, Southwest Research Institute
1985-87 Senior Research Scientist, Southwest Research Institute
1984-85 Research Scientist, Southwest Research Institute

Publications

Peer Reviewed

Mount, J.D., Marshall, J.A., & Fuller, E.J. (2013) Tracking the career paths of physics teachers in Texas, *The Physics Teacher*, 51(7), 422.

Marshall, J. A., Castillo, A. J., & Cardenas, M. B. (2013) Assessing student understanding of physical hydrology, *Hydrol. Earth Syst. Sci.*, 17, 829-836, doi:10.5194/hess-17-829-2013.

Marshall, J.A., & Berland, L. (2012). Developing a vision of engineering education. *Journal of Pre-College Engineering Education*, 2(2), 36-50.

Marshall, J.A., Castillo, A.J. & Cardenas, M.B. (2012). Assessing student understanding of physical hydrology. *Hydrology and Earth System Sciences Discussions*, 9, 1-19.

Marshall, J.A. (2012). Guest editorial: The physics major in jeopardy. *American Journal of Physics*, 80 (10), 849-850.

Marshall, J.A. (2012). Guest editorial: Could physics majors disappear? *The Physics Teacher*, 50 (6), 328.

Marshall, J.A., & Dorward, J.T. (2011). Inquiry Exercises as a Lecture Supplement for Preservice Elementary Teachers and General Education Students in Meltzer, D. and Shaffer, P., Eds, *Teacher Education in Physics: Research, Curriculum, and Practice*. Melville, NY: American Institute of Physics.

- O'Connor, J. & Marshall, J.A. (2010). From collaboration to publication. *The Physics Teacher*, 48, 408-409.
- Marshall, J.A., Petrosino, A.J. & Martin, H.T. (2010). Pre-service teachers' conceptions and enactments of Project Based Instruction. *Journal of Science Education and Technology*, 19(4), 370-386.
- Marshall, J., Herzenberg, C., Howes, R., Weaver, E.C. & Gans, D.M. (2010). Women and men of the Manhattan Project. *The Physics Teacher*, 48(4), 228-232.
- Marshall, J.A., Hagedorn, E.A., & O'Connor, J. (2009). Anatomy of a physics test: Validation of the physics items on the Texas Assessment of Knowledge and Skills. *Physical Review Special Topics: Physics Education Research*, 5(1), 32-43.
- Marshall, J.A.** (2008). Students' creation and interpretation of circuit diagrams. *Electronic Journal of Science Education*, 12(2) 112-131.
- Fies, C.H. & **Marshall, J.A.** (2008). The C³ Framework: Evaluating classroom response system interactions in university classrooms. *Journal of Science Education and Technology*, 17(5) 483-499.
- Marshall, J.A.** & Carrejo, D.C. (2008). Students' mathematical modeling of motion. *Journal of Research in Science Teaching*, 45(2), 153-173.
- Marshall, J.A.** (2008). Escape from the pipeline: Women using physics outside academia. *The Physics Teacher*, 46, 20-24.
- Carrejo, D. & **Marshall, J.A.** (2007). What is mathematical modeling? Exploring prospective teachers' use of experiments to connect mathematics to the study of motion. *Mathematics Education Research Journal*, 19(1), 45-76.
- Marshall, J.A.**, Pine, B. & Taylor, W.W.L (2007). INSPIRE: A VLF radio project for high school students. *The Physics Teacher*, 45, 42-45.
- Marshall, J.A.** & Young, E. S. (2006). Pre-service teachers' theory development in physical and simulated environments. *Journal of Research in Science Teaching*, 43 (9), 907-937.
- Fies, C.H. & **Marshall, J.A.** (2006). Classroom response systems: A review of the literature. *Journal of Science Education and Technology*, 15(1), 101-110.
- Marshall, J.**, Taylor, W., Pine, B. & Green, J. (2004). Authentic science experiences for high-school students: the INSPIRE example. *Advances in Space Research*, 34 (10), 2145-2152.
- Marshall, J. A.** (2004). Construction of meaning: Urban elementary students' interpretation of geometric puzzles. *Journal of Mathematical Behavior*, 23(2), 169-182.
- Confrey, J., Sabelli, N. & **Marshall, J.** (2001). Research and evaluation on Preparing Tomorrow's Teachers for Technology, originally published by the Department of Education PT3 Vision Quest program online at <http://www.pt3.org/VQ/html/sabelli>.
- Marshall, J.A.** & Dorward, J.T. (2000). Inquiry exercises as a lecture supplement for preservice elementary teachers and general education students. *American Journal of Physics, Physics Education Research Supplement*, 68 (7), S27-S36, 2000.
- Wiley, T. & **Marshall, J.A.** (1997). Radioactive balloon measurements in Utah. *The Physics Teacher*, 35, (8), 478-479.
- Marshall, J.A.** & Dorward, J.T. (1997). The effect of introducing biographical material on women scientists into the introductory physics curriculum. *Journal of Women and Minorities in Science and Engineering*, 3 (4), 279-294.

- Marshall, J.A.** & Buckingham, J.P. (1995). Find Your Wings: a math/science exploration project for elementary school girls. *Journal of Women and Minorities in Science and Engineering*, 2 (1-2), 65-81.
- Mende, S.B., Fuselier, S.A., Swenson, G.R. & **Marshall, J.A.** (1995). Imaging of artificial aurora in the upper atmosphere. *Journal of Geophysical Research*, 100, A11, 21,385-21,396.
- Katz, I., Barfield, J.N., Burch, J.L., **Marshall, J.A.**, Gibson, W.C. & Neubert, T. (1994). Interactions between the Space Experiments with Particle Accelerators' plasma contactor and the ionosphere. *Journal of Spacecraft and Rockets*, 30, 6, 1079-1084.
- Burch, J. L., Roberts, W. T., Taylor, W. W. L., Kawashima, N., **Marshall, J. A.**, Moses, S. L., Neubert, T., Mende, S. B. & Choueiri, E. Y. (1994). Space Experiments with Particle Accelerators: SEPAC. *Advances in Space Research*, 14, 263, 1994.
- Marshall, J. A.**, Burch, J. L., Choueiri, E. Y. & Kawashima, N. (1993). CIV experiments on ATLAS-1. *Geophysical Research Letters*, 20, 499-502.
- Burch, J. L., Mende, S. B., Kawashima, N., Roberts, W. T., Taylor, W. W. L., Neubert, T., Gibson, W. C., **Marshall, J. A.** & Swenson, G. R. (1993). Artificial auroras in the upper atmosphere, 1, electron beam injections. *Geophysical Research Letters*, 20, 491-494.
- Barlett, M.L., Ferguson, R.W., Hoffmann, G.W., **Marshall, J.A.**, Ray, L., Amann, J.F., Bonner, B.E. & McClelland, J. B. (1991). Inclusive quasielastic spin observables for p+H, ^{12}C at 500 MeV. *Physics Letters B*, 264, no.1-2, 21-25.
- Marshall, J.A.**, Burch, J.L., Kan, J.R., Reiff, P.H. & Slavin, J.A. (1991). Sources of field-aligned currents in the auroral plasma. *Geophysical Research Letters*, 18, no.1, 45-48.
- Young, D.T. & **Marshall, J.A.** (1990). An isochronous poloidal geometry time-of-flight ion mass spectrometer for energetic plasmas. *Nuclear Instruments and Methods in Physics Research*, A298, 227-233.
- Marshall, J.A.**, Lin, C.S. & Burch, J.L. (1990). Further studies of ELF oscillations during electron beam firings on Spacelab 1. *IEEE Transactions on Nuclear Science*, 18, no.1, 169.
- Young, D. T., Burch, J. L. & **Marshall, J. A.** (1989). Ion accelerators in space plasma mass spectroscopy. *Nuclear Instruments and Methods*, B40/41, 750-754.
- Ferguson, R., McGill, J., Glashauser, C., Jones, J., Nanda, S., Barlett, M., Hoffmann, G., **Marshall, J.** & McClelland, J. (1988). Polarization transfer for inclusive proton-nucleus inelastic scattering at 800 MeV. *Physics Review*, C 38, 2,193-2,200.
- Marshall, J. A.**, Burch, J. L., Kan J.R. & Slavin, J.A., (1988). DE-1 Observations of return current regions in the nightside auroral oval, *Journal of Geophysical Research*, 93, no. A12, 14,542-14,548.
- Marshall, J.A.**, Lin, C.S., Burch, J.L., Obayashi, T. & Beghin, C. (1988). Spacelab 1 experiments on interactions of an energetic electron beam with neutral gas. *Journal of Spacecraft and Rockets*, 25, no. 5, 361-367.
- Bame, S. J., Martin, R. H., McComas, D. J., Burch, J. L., **Marshall, J. A.** & Young, D.T. (1989). Three dimensional plasma measurements from three-axis stabilized spacecraft. *Solar System Plasma Physics*, AGU Monograph no. 54, 441-452.
- Young, D.T., **Marshall, J. A.**, Burch, J.L. Bame, S.J. & Martin, R.H. (1989). A 360° field-of-view toroidal ion composition analyzer using time-of-flight. *Solar System Plasma Physics*. AGU Monograph no. 54, 171-176.
- Young, D.T., Bame, S.J., Thomsen, M.F., Martin, R.H., Burch, J. L., **Marshall, J.A.** & Reinhard, B. (1988). 2 π Radian Field-of-View Electrostatic Analyzer, *Review of Scientific Instruments*, 59, no. 5, 743-751.

- Young, D.T., **Marshall**, J.A., Burch, J.L., Booker, T.L., Ghielmetti, A.G. & Shelley, E.G (1987). A double focusing toroidal mass spectrograph for energetic plasmas: Experimental results. *Nuclear Instruments and Methods*, A258, no. 3, 304-309.
- Young, D.T., Ghielmetti, A.G., **Marshall**, J.A., Burch, J.L., Booker, T.L. & Shelley, E.G. (1987). Experimental tests of a toroidal electrostatic analyzer, *Review of Scientific Instruments*, 58, no. 4, 501-508.
- Marshall**, J.A., Barlett, M.L., Ferguson, R.W., Hoffmann, G.W., Milner, E.C., Ray, L., Amann, J.F., Bonner, B.E. & McClelland, J.B. (1986). Determination of proton-nucleon analyzing powers and spin-rotation and -depolarization parameters at 500 MeV. *Physics Review*, C 34, no. 4, 1433-1438.
- Barlett, M.L., Hoffmann, G.W., McGill, J.A., Hoistad, B., Ray, L., Ferguson, R.W., Milner, E.C., **Marshall**, J.A., Amann, J.F., Bonner, B.E. & McClelland, J.B. (1985). Proton-nucleon spin-rotation and -depolarization parameters at 800 MeV. *Physics Review*, C 32, 239-247.
- Barlett, M.L., Hoffmann, G.W., McGill, J.A., Ferguson, R.W., Milner, E.C., **Marshall**, J.A., Amann, J.F., Bonner, B.E. & McClelland, J.B. (1984). Forward-angle elastic proton-proton spin-depolarization and -rotation parameters at 0.8 GeV. *Physics Review*, C 30, 279-284.
- Barlett, M.L., Hoffmann, G.W., McGill, J.A., Ferguson, R.W., Milner, E.C., **Marshall**, J.A., Amann, J.F., Bonner, B.E., McClelland, J.B., Blanpied, G.S. & Arndt, R.A. (1983). Forward-angle elastic and quasi-elastic proton-neutron cross sections and analyzing powers at 0.8 GeV. *Physics Review*, C 27, 682-696.
- McGill, J.A., Glashauser, C., Jones, K., Nanda, S.K., Barlett, M.L., Ferguson, R.W., **Marshall**, J.A., Milner, E.C. & Hoffmann, G.W. (1984). Inclusive (p,p') cross sections and analyzing powers for ^1H and ^{12}C in the delta region. *Physics Letters*, 134B, 157-160.
- Early, S.R., Hellman, F., **Marshall**, J. & Geballe, T.H. (1981). A silicon-on-sapphire thermometer for small sample low temperature calorimetry. *Physica*, 107 B+C, 327-328.

Commissioned

- Marshall**, J.A. & Riegle-Crumb, C. (2013) Assessment of the evaluation of the IBL Mathematics Project. Educational Advancement Foundation, Austin, TX.
- Svihla, V., **Marshall**, J., & Petrosino, A. J. (2008). *K-12 Engineering Education Impacts*: National Academy of Engineering Committee on Understanding and Improving K-12 Engineering Education in the United States.
- Confrey, J., Lemke, J. L., **Marshall**, J., & Sabelli, N. (2002). A final report on a conference on models of implementation research within science and mathematics instruction in urban schools. Austin, TX: University of Texas, Systemic Research Collaborative for Education in Mathematics, Science, and Technology.

Refereed Proceedings

- Marshall**, J.A. (2006). Expert analysis of the quality of physical science items on the TAKS. Proceedings of the American Educational Research Association 2006 Annual Meeting (San Francisco, CA).
- Marshall**, J. A. (2005). Apprentice teachers' conceptions of project-based instruction and their relation to implementation, Proceedings of the NARST 2005 Annual Meeting (Dallas, TX).
- Marshall**, J. A. (2004). Effects of simulation technology on the development of theories in action, Proceedings of the NARST 2004 Annual Meeting (Vancouver, Canada).
- Marshall**, J.A., Makar K., & Kazak, S. (2002). Young urban students' conceptions of data uses, representation, and analysis. In D. Mewborn et al. (Eds), *Proceedings of the 24th Annual Meeting of*

the North American Chapter of the International Group for the Psychology of Mathematics Education (Vol.3, pp.1293-1304), Columbus, OH: ERIC Clearinghouse for Science, Mathematics, and Environmental Education.

Other Conference Proceedings

Neubert, T. Chang, I.C., Burch, J.L. & **Marshall**, J.A. (1993). The SEPAC artificial aurora. Proceedings of the International Symposium on the Electron Beam Experiment and its Applications, Atami Japan, March 1993, 67-76.

Katz, I. Barfield, J.N., Burch, J.L., **Marshall**, J.A. & Gibson, W.C. (1993). Interactions between the SEPAC plasma contactor and the ionosphere. Proceedings of the International Symposium on the Electron Beam Experiment and its Applications, Atami Japan, March 1993, 33-40.

Marshall, J.A. Burch, J.L. & Choueiri, E.Y. (1993). CIV experiments on ATLAS-1: Observations and modeling results. Proceedings of the International Symposium on the Electron Beam Experiment and its Applications, Atami Japan, March 1993, 41-56.

Popular Press

Marshall, J.A. (2007). How to attract and keep more women in Casual Games, *Casual Connect Magazine*, Summer 2007, 15.

Marshall, J.A. Burch, J.L. & W.C. Gibson (1992). New light on auroras. *Technology Today*, September, 2-7.

Marshall, J.A. (1990). Measuring particles in interplanetary space. *Technology Today*, September, 2-7.

Invited National Presentations

Marshall, J.A. (November, 2013) *Pre-service Teachers' Understanding of the Nature of Science vs. Engineering* [Lo que entienden maestros de la Física, en formación, sobre la ingeniería, y lo que pueden aprender de un reto sobre diseño] Reunión Annual, American Association of Physics Teachers-MX, Ensenada, México.

Coble, C., Dennison, R.J., & Marshall, J.A. (June 2013) *Overhauling Teacher Prep to Improve K-12 STEM Instruction*, US News & World Report STEM Solutions Conference, Austin, TX.

Marshall, J.A. (May, 2013). *The UTeach Secondary STEM Teacher Preparation Model*. National Center for Education and the Economy Board Meeting, Austin, TX.

Marshall, J.A., Isakson, M., Mahoney, K., Manning, H., & Jones, B. (January, 2013) Career Panel, Conference for Undergraduate Women in Physics, Austin, TX.

Marshall, J.A. (August, 2011). *The conceptual Framework for Common Core Standards and how it relates to Texas Standards*. American Association of Physics Teachers Meeting, Omaha, NE.

Marshall, J.A (September, 2010). *The UTeach Teacher Preparation Model: Possibilities for Replication*. Texas Math-Science Summit, San Antonio, TX

Marshall, J. A. (June, 2010). *UTeach Program at UT Austin*. American Physical Society Chairs Conference: Broadening Physics Career Paths: Industry, Education and Policy. Greenbelt, MD.

- Marshall, J.A. (July, 2009). *Overcoming Barriers: Establishing and Improving Teacher Preparation Programs*. American Association of Physics Teachers Summer Meeting, Ann Arbor, MI.
- Marshall, J.A. (April, 2008). *Physics by Inquiry: Deepening Understanding from Elementary Teachers to University Faculty*. American Physical Society April Meeting, St. Louis, MO.
- Marshall, J.A. (January, 2008). *Teachers' Mathematical Modeling of Motion*. American Association of Physics Teachers Winter Meeting, Baltimore, MD.
- Hickman, P. & Marshall, J.A. (August, 2007). *Master Teachers: Two Different Programs with Different Roles to Support Teachers of Physics*. North Carolina Physics Teacher Education Coalition Workshop, Chapel Hill, NC.
- Marshall, J.A. (July, 2007). *Physics: Who Should Take It, Who Should Teach It, and Who Should Teach the Teachers*. Presentation at the 2007 SYFR Summer Retreat: Science and Mathematics Education in a Flat World, Santa Fe, NM.
- Marshall, J.A. (July, 2006). *UTeach: An Innovative Teacher Preparation Program Comes of Age*. American Association of Physics Teachers Summer Meeting, Syracuse, NY.
- Marshall, J.A. (June, 2006). *UTeach as a Model for Secondary Science and Math Teacher Preparation*. LEPP Conference on the Role of Colleges and Universities in Preparing Future Physics Teachers, Cornell University, NY.
- Marshall, J.A. (January, 2006). *The Gender Gap in Physics: Explanations, Data, Analysis*. American Association of Physics Teachers Winter Meeting, Anchorage, AK.
- Marshall, J.A. (August, 2005). *Results of Student-Centered Inquiry Learning in the UTeach Program*. American Association of Physics Teachers Summer Meeting, Sacramento, CA.
- Marshall, J.A. & Carrejo, D.C. (November, 2004). *Teachers' Conceptions of Velocity*. Texas State University Physics Department Colloquium, San Marcos, TX.
- Marshall, J.A. (November, 2004). *Assessing the Assessment: An Evaluation of the Science TAKS*. Science Teachers Association of Texas Conference for the Advancement of Science Teaching (CAST), Corpus Christi, TX.
- Marshall, J.A. (August, 2004). *UTeach: A Model Collaborative Teacher Preparation Program*. American Association of Physics Teachers Summer Meeting, Salt Lake City, UT.
- Marshall, J.A. (October, 2002). *Preliminary Observations of Pre-service Teachers' Conceptions of Linear Momentum*. Physics Education Group seminar at the University of Washington, Seattle, WA.

National Contributed Presentations

- Marshall, J.A. (July, 2013) *Pre-service Teachers' Understanding of the Nature of Science vs. Engineering*, American Association of Physics Teachers Meeting, Portland, OR
- Farmer, C., Rodriguez, S. Marshall, J. (May, 2013). *Engineering across the UTeach Curriculum*. 2013 UTeach Conference, Austin, TX

- Marshall, J.A., Lopez, R. & Matsler, K.J. (May, 2013). *Preparing Composite Science Certification Students to Teach Physics*. 2013 UTeach Conference, Austin, TX
- Castillo, A.J., Marshall, J.A., Cardenas, M.B. (2012), Assessing student understanding of physical hydrology, Abstract ED21A-0691 presented at 2012 Fall Meeting, AGU, San Francisco, Calif., 3-7 Dec.
- Marshall, J.A., & Edelson, G. (January, 2012). *An optics design challenge tying preservice teachers to physics classrooms*. American Association of Physics Teachers Winter Meeting, Ontario, CA.
- Marshall, J.A., & Edelson, G. (May, 2011). *Incorporating design challenges into UTeach courses*. 2011 UTeach Conference, Austin, TX.
- Marshall, J.A. (January, 2011). *Harriet Brooks: Part of Rutherford's Legacy*. American Association of Physics Teachers Winter Meeting, Jacksonville, FL.
- Marshall, J.A., (March, 2010). *Exploring the Utility of Discipline-Specific Pedagogy Courses in Science Teacher Recruitment and Preparation: Learning Physics in a Science and Mathematics Education Center*. National Association for Research in Science Teaching, Philadelphia, PA.
- Marshall, J.A. & Stefani, F. (February, 2010). *Qualitative Understanding of Magnetism at Three Levels of Expertise*. American Association of Physics Teachers Winter Meeting, Washington, DC.
- Marshall, J.A., Hagedorn, E. & O'Connor, J. (February, 2009). *Assessing the Validity of a Standardized Physics Test*. American Association of Physics Teachers Winter Meeting, Chicago, IL.
- Marshall, J.A., Petrosino, A.J. & Martin, T. (March, 2008). *What Drives Novice Science Teachers' Implementation of Project Based Instruction?* American Education Research Association, New York, NY.
- Marshall, J.A. (April, 2006). *Expert Analysis of the Quality of Physical Science Items on the TAKS*. American Educational Research Association, San Francisco, CA.
- Marshall, J.A. (January, 2005). *Gender Differences in Representations of Electric Circuits*. American Association of Physics Teachers Winter Meeting, Albuquerque, NM.
- Marshall, J.A. (April, 2005). *Apprentice Teachers' Conceptions of Project Based Instruction and their Relation to Implementation*. National Association for Research in Science Teaching, Dallas, TX.
- Marshall, J.A. (April, 2004). *Effects of Technology on the Development of Theories-in-Action*. National Association for Research in Science Teaching, Vancouver, BC.
- Marshall, J.A. (January, 2004). *Content Analysis of Texas' 10th and 11th Grade Science Tests*. American Association of Physics Teachers Winter meeting, Miami, FL.
- Marshall, J.A. (January, 2003). *Observations of Pre-service Teachers' Conceptions of Conservation of Momentum*. American Association of Physics Teachers National Winter Meeting, Austin, TX.

Marshall, J.A. (January, 2001). *Opportunities for Participation in NASA Space Science: IMAGE & AIS*. Winter Meeting of the American Association of Physics Teachers, San Diego, CA.

Marshall, J.A. (January, 2000). *Group Activities to Address Conceptual Difficulties in Large Introductory Astronomy Classes*. Winter Meeting of the American Association of Physics Teachers, Kissimee, FL.

Marshall, J.A. (August, 1999). *A Hands-On Model of the Fusion Process*. Summer Meeting of the American Association of Physics Teachers, San Antonio, TX.

Marshall, J.A. (August, 1998). *Hands-on Activities for Sub-Atomic Physics*. Summer Meeting of the American Association of Physics Teachers, Lincoln, NE.

Marshall, J.A. (February, 1998). *Assessing Hands-On Activities*. Third Annual National Institute for Science Education Forum, Indicators of Success in Post-secondary Science, Mathematics, Engineering, and Technology Education: Shapes of the Future, Washington, DC.

Regional Presentations

Marshall, J.A. (October, 2012) *Mastery of Physics: Understanding vs. Doing*. University of Texas, Austin, Physics Department colloquium.

Marshall, J.A. (March, 2011). *Harriet Brooks: Part of Our Nuclear Heritage*. American Association of Physics Teachers Texas Section Spring Meeting, Stephen F. Austin State University, Nacogdoches, TX.

Marshall, J.A. (October, 2009). [Invited] *Women and Men of the Manhattan Project*. American Association of Physics Teachers Texas Section Spring Meeting, San Marcos, TX.

Marshall, J.A. (October, 2008). [Invited] *Assessing the Assessment: Validation of Physics Standardized Test Items*, Texas Section Meeting of the American Association of Physics Teachers/American Physical Society Joint Fall Meeting, El Paso, TX.

Marshall, J.A. (March, 2008). *UTeach: A model teacher preparation program*. American Association of Physics Teachers Texas Section Spring Meeting, Corpus Christi, TX.

Marshall, J.A. (March, 2007). *Teaching Physics in Texas High Schools*. American Association of Physics Teachers Texas Section Spring Meeting, Abilene, TX.

Marshall, J.A. (March, 2005). *Gender Differences in Teachers' Representations of Electric Circuits*. American Association of Physics Teachers Texas Section Spring Meeting, Steven F. Austin State University, Texas Section, Nacogdoches, TX.

Marshall, J.A. (October, 2004). *Teachers' Conceptions of Velocity*. American Association of Physics Teachers Texas Section Fall Meeting, Baylor University, Waco, TX.

Marshall, J.A. (October, 2003). *Assessing the Assessment: Context Issues in Test Questions*. American Association of Physics Teachers Texas Section Fall Meeting, Texas Tech University, Lubbock, TX.

- Marshall, J.A. (March, 2002). *Pre-service Teachers' Conceptions of Conservation of Momentum*. American Association of Physics Teachers Texas Section Fall Meeting, Stephen F. Austin State University, Nacogdoches, TX.
- Marshall, J.A. (November, 2001). *Pre-service Teachers' Conceptions of Radioactive Decay*. American Association of Physics Teachers Texas Section Fall Meeting, Texas Christian University, Fort Worth, TX.
- Marshall, J.A. (October, 2000). *INSPIRE: A Space Physics Research Opportunity for Students*, American Association of Physics Teachers Texas Section Fall Meeting, Rice University, Houston, TX.
- Marshall, J.A. (April, 2000). *Kinesthetic Demonstrations*. Idaho-Utah Section Meeting of the American Association of Physics Teachers, Twin Falls, ID.
- Marshall, J.A. (July, 1998). *The Future of Women in Physics Step I: Training Future Elementary Teachers*. AAAS Pacific Division Regional Meeting, Symposium on Women in Physics (Symposium Chair), Logan UT.
- Marshall, J.A. (March, 1998). *Hands-On Activities for Sub-Atomic Physics*. Idaho-Utah Section Meeting of the American Association of Physics Teachers, Pocatello, ID.
- Marshall, J.A. (March, 1997). *The Effect of Including Biographical Material on Women Scientists in the Introductory Physics Curriculum*. Utah-Idaho Section Meeting of the American Association of Physics Teachers, Salt Lake City, UT.
- Marshall, J.A. (March, 1996). *Hands-on Activities for a General-Education Physics Class*. Idaho-Utah Section Meeting of the American Association of Physics Teachers Meeting, Boise, ID.

Funded Research

University of Texas College of Natural Sciences

- 2007- University of Texas Physics Department Integrative Graduate Education and Research Traineeship (IGERT), National Science Foundation, Curriculum and Development, Executive Committee Member, Curriculum Development Consultant.
- 2001-04 UTeach -A Secondary Pre-service Program in Science and Mathematics, Collaboratives for Excellence in Teacher Preparation Grant, DUE-9953187, National Science Foundation, Research Scientist.

University of Texas Jackson School of Geosciences Environmental Science Institute

- 2007-2010 National Science Foundation G-K12 program: From Aquifers to Estuaries Tracing a Drop of Water via an Interactive Program Linking UT Scientists with K-12 Students and Teachers, Co-Principal Investigator (\$1,797,059).

University of Texas College of Education

- 2010 UTeachEngineering: Training Secondary Teachers to Deliver Design-Based Engineering Instruction (22,047.)
- 2008 College of Education Dean's Fellowship (\$3000)
- 2005 University of Texas Special Research Grant (\$135.50)
- 2004 Implementation of a User-Friendly System of Providing Feedback on Formative Assessment for Apprentice Teachers, UT College of Education Vision Grant, (\$3000)

2001-02 Developing a Coherent View of Models of Research-based Urban Systemic Reform in Mathematics and Science Education using Technology: An Invitational Working Meeting, National Science Foundation, Co-Principal Investigator (\$44,000).

Utah State University Physics Department

1999-2000 Applied Information Systems Research, NASA, Space Science Directorate, Co-Investigator.
1996-98 An Investigative Laboratory Program in Physics with Electronic Media, National Science Foundation, Co-Investigator with D. Peak (\$30,000).
1995-2001 NASA Imager for Magnetopause to Aurora Global Imager (IMAGE), Public Outreach, Education, Teaching and Reaching Youth (POETRY) team member.
1995-97 A One-quarter, Inquiry-based Physics Course for Pre-service Elementary Teachers using Gender-neutral Course Materials, National Science Foundation, DUE- #9555017, Principal Investigator (\$61,040)
1995-96 Curriculum Development for Applications of Amusement Park Physics, US Department of Education Eisenhower Fund, Co-Investigator with J.R. Dennison (\$22,000)
1995-96 Study of the Effect of Gender-neutral, Inquiry-based Course Materials on Elementary Education Majors, Utah State University, Principal Investigator (\$14,000)
1995 Integration of Laboratory Exercises into the General Education Introductory Physics Course, Utah State University College of Science, Principal Investigator (\$2500)

Southwest Research Institute

1994 Find Your Wings: A Math Science Exploration Project for Elementary School Girls, National Science Foundation, Program for Women and Girls, Principal Investigator, HRD-9353765 (\$70,000)
1993-95 Young Engineers and Scientists: A Mentorship Program for High School Students, National Science Foundation, DRL (formerly ELSIE) #9256066, Principal Investigator (\$154,182)
1987-94 NASA POLAR satellite and Cassini Saturn Orbiter, Development of time of flight mass spectrographs, Research Scientist.
1987-90 NASA Comet Rendezvous Asteroid Flyby (CRAF) Mission, Magnetic mass spectrometer development, modeling and instrument calibration, Research Scientist.
1985-91 NASA Dynamics Explorer (satellite), Analysis of particle data, specializing in magnetic field-aligned currents, Research Scientist.
1985-94 NASA Space Experiments with Particle Accelerators, ATLAS 1 Shuttle mission, Development and data analysis of electron beam and critical ionization velocity experiments, Lead Scientist for Diagnostics.
1984-94 Southwest Research Institute Ion/electron Calibration Facility, Automated data acquisition and control equipment and visualization and analysis software, Manager.

Service

National Committees

2006-09 American Association of Physics Teachers National Committee on Women in Physics
2005-06 American Association of Physics Teachers National Nominating Committee

University of Texas at Austin Committees

2002- Science and Mathematics Education Graduate Studies Committee (Chair 2011-)
2002- Curriculum and Instruction Graduate Studies Committee
2005 Center for Women and Gender Studies Affiliate
2005-07 Curriculum and Instruction Standing Committee on Fellowships and Other Awards
2004-06 UTeach Steering Committee, Post Bac Admissions Committee

2004-05 University of Texas Library Committee
2004-05 College of Education Teacher Education Committee
2010- UTeach Steering Committee
2012- Graduate Assembly
2012- Committee on Committees

Professional Development/Outreach

2011 IGERT Nano Academy Teachers Forum, July 11
2011 UTeach Engineering Summer Institute for Teachers, June 6- July 13
2011 National Math Science Initiative-UTeach Institute Conference, May 21-22
2011 UTeach Classroom Interactions Workshop March 24-25.
2010 UTeach Replication Workshop, October 19
2010 Austin ISD- UT Physics Boot Camp, July 26-30
2010 GK12 Tracing a Drop of Water 2008 Summer Workshop, June 14-16
2010 IGERT Nano Academy Teachers Forum, July 10
2010 National Math Science Initiative-UTeach Institute Conference, May 21-22
2010 IGERT Nano Academy Teachers Forum, July 10
2009 GK12 Tracing a Drop of Water 2008 Summer Workshop, June 6-8
2009 National Math Science Initiative-UTeach Institute Conference, May 21-22
2008 Austin ISD- UT Partnership Physics Workshop, June 9-20
2008 GK12 Tracing a Drop of Water 2008 Summer Workshop, June 6-8
2008 National Math Science Initiative-UTeach Institute Conference, May 21-22
2008 Texas High School Science Working Group for the Review of the Texas Essential Knowledge and Skills, Jan. 28- February 2
2008 Physics Teacher Education Coalition Annual Conference, Classroom Interactions Workshop and Plenary Panel, Feb.28-March 1
2007 Conference for the Advancement of Science Teaching (Physics Strand Workshop), November 16-17
2007 GK12 Tracing a Drop of Water Workshop, August 6-10
2007 Professional Development Workshop: Physics by Inquiry- Properties of Matter, Temperature, Heating, June 25-29
2007 National Math & Science Initiative UTeach Replication Conference, June 13-14
2007 Texas Education Agency Physics End of Course Exam Advisory Committee, March 2
2007 Texas Education Agency Physics Summit, March 13-14
2006 Joint UTeach- Crockett High School Math/Science Lesson Study Program
2005 SBEC Advisory Committee Certification Review, April 29
2003 University of Texas Master Teacher Summer Institute (Physics), June
2001 IMAGE/INSPIRE Workshops for Physics Teachers
2000-01 Austin Teacher Scientist Alliance
2000-01 AISD Partners in Education Mentor
1997-00 KUSU "Outreach Utah" Science Hour Guest
1996-99 Integrated Science Workshop for Secondary Teachers, Utah State University
1995-96 Navajo Summer Science Camp
1994-98 USU *Expanding Your Horizons* coordinating committee, presenter
1993-94 Director, *Young Engineers and Scientists* mentorship program for high school students
1993-94 Director, *Find Your Wings* project for 4th-6th grade girls
1992-94 Texas Space Science Pilot Speakers Bureau presenter
1992 Texas A&I Summer Residential Engineering Program workshop
1990-91 TI-IN Network guest lecturer
1984-94 San Antonio *Expanding Your Horizons* Conference coordinating committee, presenter

Manuscript and Proposal Reviews

1984-2008 Served as a panel reviewer for NASA and the National Science Foundation
2001- Reviewed manuscripts for journals including: *Geophysical Review Letters*, *Journal of Women and Minorities in Science and Engineering*, *Journal for Research in Mathematics Education*, *Journal of Research in Science Teaching*, *The Physics Teacher*, *International Journal of Science Education*, and *Science Education*

Board Memberships and Offices Held

2012 American Association of Physics Teachers, President
2008-2010 Girl Scouts of Central Texas STEM Advisory Committee
2007-2011 University of Texas Physics Department Integrative Graduate Education and Research Traineeship (IGERT) Executive Committee
2007- present Physics Teacher Education Coalition Editorial Board
2006-08 Minority Liaison Officer for Science and Mathematics Education
2006-07 President, Texas Section of the American Association of Physics Teachers
2005-ongoing PhysTEC Advisory Committee
2003-07 Texas Section of the American Association of Physics Teachers/American Physical Society Texas Physics Assessment Team (Chair 2004-2006)
1999-02 University Space Research Association, Science and Engineering Education Council
1999-00 President, American Association of Physics Teachers, Idaho-Utah Section
1998-99 Cache Science Alliance
1995-97 Women and Gender Research Institute, USU

Courses Taught

- EDC 365 D Classroom Interactions (UTeach program)
- EDC 365E Project Based Instruction (UTeach program)
- EDC 650 S Apprentice Teaching Practicum (UTeach program)
- EDC 384P Equity in Science and Mathematics Education (Science & Mathematics Education graduate core course)
- EDC 385G Curriculum History and Development in Science and Mathematics Education
- SCI 360 Physical Science, Physics by Inquiry (Science and Mathematics Education course)
- UTS 380 Learning to Teach Physics by Inquiry (UTeach Summer Masters Program graduate content course), Summer 2005
- EDC 385G Gender Issues in Science & Mathematics, Science and Mathematics Education graduate advanced topics course
- EDC 185G Science and Mathematics Education Forum

Students Supervised

Doctoral Students: Katie Makar, co-chair (2003), Barbara Austin (2004), David Carrejo, co-chair (2004), Carmen Fies (2005), Erica Slate Young (2005), Francesco Stefani (2008), Jennifer Mount (2012)

Masters Students: Erin Atwood, Second Reader (2004); Melissa Altobelli (2007); Kathleen Paige Evans (2007); Kiran Kumari (2007); Karla Pohl (2007); Christopher Zernial, Second Reader (2008), Stephanie Klenzendorf (2009), Cesar Gutierrez (2009), Cynthia Lima (second reader, 2009), Hope Fluegel (2010), Tania Tasneem (2011), Kristin Brudigam (second reader, 2011), Kyle Kendrick (second reader, 2012), Brette Garner (2013)

Honors

University of Texas College of Education Dean's Fellowship, 2008
Who's Who Among America's Teachers, profiled in 5th and 7th Edition (1998, 2002)

USU Faculty Book Award, 1998

USU Robbins Award for Professor of the Year Finalist, 1997

USU College of Science Teacher of the Year, 1997

USU President's Leadership Council Faculty Member of the Year, 1996-97

Patents

David T. Young, **Jill A. Marshall**, Melvin A. Park, Emile A. Schweikert, Patent No. 5,350,976 issued November 1, 1994 for "Time of Flight Mass Spectrometer, Ion Source, and Methods of Preparing a Sample for Mass Analysis and of Mass Analyzing a Sample."

David T. Young, **Jill A. Marshall**, Emile A. Schweikert, Melvin A. Park, Patent No. 5,463,220 issued Oct. 31, 1995 for "Time of Flight Mass Spectrometer, Ion Source, and Methods of Preparing a Sample for Mass Analysis and of Mass Analyzing a Sample (Continuation)."

Professional Affiliations

National Association for Research in Science Teaching.

American Association of Physics Teachers

American Association for the Advancement of Science

American Geophysical Union