

# Wendy K. Adams

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**Position:** Director  
Science Education Programs  
University of Northern Colorado  
Greeley, CO 80639

Associate Professor  
Department of Physics and Astronomy  
University of Northern Colorado  
Greeley, CO 80639

Graduate Faculty  
Graduate School and International Admissions  
University of Northern Colorado  
Greeley, CO 80639

Teacher Education Faculty  
College of Education and Behavioral Sciences  
University of Northern Colorado  
Greeley, CO 80639

**Home Address** 1914 18<sup>th</sup> Avenue  
Greeley, CO 80631

**Telephone**

- **Office:** (970) 351-2419
- **Home:** (970) 539-6154

**Education:**

2007  
Ph.D., University of Colorado, Boulder, Colorado  
Physics Education Research

1996  
M.S., University of Colorado, Boulder, Colorado  
Physics

1994  
B.A., University of Northern Colorado, Greeley, Colorado  
Physics

**Work Experience:**

2014 –

University of Northern Colorado, Greeley, Colorado  
Director, Science Education Programs  
Teaching, Research, Service

2013 –

University of Northern Colorado, Greeley, Colorado  
Associate Professor, Department of Physics and Astronomy  
Teaching, Research, Service

2011 – 2013

University of Northern Colorado, Greeley, Colorado  
Assistant Professor, School of Earth Science and Physics  
Teaching, Research, Service

2010 – 2013

Acoustical Society of America, American Institute of Physics.  
Education Coordinator

- Develop new materials and identify existing materials to promote K-12 acoustics education.
- Research all new materials and web resources with appropriate age students during iterative development process.
- Inform undergraduates about future acoustics opportunities including prizes, awards, scholarships, graduate programs and careers.
- Communicate with students, teachers and the public via magazine articles, journal articles, the web, textbooks, demonstrations and workshops.

2010

University of Northern Colorado, Greeley, Colorado  
Adjunct Faculty  
Teaching

2010 – 2011

University of Northern Colorado, Greeley, Colorado  
Affiliate Faculty  
Research

2008 – 2010

University of Colorado, Boulder, Colorado  
Director of Research Science Education Initiative,

- Responsible for providing advice and guidance to 16 Science Teaching Fellows, faculty and graduate students within the Biology, Chemistry, Geological Science, Integrative Physiology and Physics Departments. Advised on research techniques, assessing effectiveness of various teaching methods and identification of outcomes appropriate for publication as well as reviewed educational publications before submittal to scholarly journals.
- Responsible for fiscal management (annual budget: \$1,170,000)
- Responsible for advising the five departments involved on human resource and finance related issues.

2008 – 2010

University of Colorado, Boulder, Colorado  
Co-Director PhET Interactive Simulations,  
Research, Administration, Coordination

2006 – 2008  
University of Colorado, Boulder, Colorado  
Business Manager – PhET Interactive Simulations and Science Education Initiative  
Administration, Coordination

2003 – 2007  
University of Colorado, Boulder, Colorado  
Research Assistant – Physics Education Research under Carl Wieman, Distinguished Professor  
Research

1996 – 2003, and 2005  
University of Northern Colorado, Greeley, Colorado  
Lecturer  
Teach, Service

1995-1996  
University of Colorado, Boulder, Colorado  
Research Assistant – Atomic Experiment and Theory under Allan Gallagher and John Cooper, Professors JILA (Joint Institute for Laboratory Astrophysics),  
Research

1995 – 1996  
University of Colorado, Boulder, Colorado  
Lead Graduate Teacher - Physics Graduate Teacher Program

- Organize orientation and training for incoming graduate physics teaching assistants. Entailed interviewing and training volunteer workshop presenters, presenting and acquiring equipment for workshops.
- Appointed by the Dean of Arts and Sciences to represent University of Colorado at the National Convocation on Science and Engineering

Doctoral Education: Washington, D.C.,

1994-1995,  
University of Colorado, Boulder, Colorado  
Teaching Assistant – Physics  
Teach

1993  
Indiana University, Bloomington, Indiana  
Research Assistant – Nuclear Theory under Charles Horowitz, Professor, Indiana University Cyclotron Facility,  
Research

**Area of  
Specialization:**

Physics Education Research, Formative Assessment, Digital Learning Tools, Problem Solving, Attitudes and Beliefs about science and Think-aloud Interviews

**Research Areas/  
Interests:**

Problem solving, teacher preparation, Acoustics K-16 educational materials, low stakes assessment and evaluation, student perceptions of and attitudes about science, digital curriculum materials and integration of education research results into courses and curricula.

**Peer Reviewed  
Publications:**

**Under Review:**

Adams, W. K. and Wieman, C.E. Analyzing the many skills involved in solving complex physics problems, *American Journal of Physics*, 2013, (in review).

Wieman, C. E., Adams, W. K. and Perkins, K. K. Educational simulations that enhance motivation, engagement, and learning, *China Physics (submitted)* Invited

**Published:**

Day, J., Adams, W., Wieman, C. E., Schwartz, D. L. and Bonn, D. A. Invention Activities: A Path to Expertise, *Physics In Canada*, 2014, 70, 2 (in press)

Adams, W. K., Clark, A. and Schneider, K. Classroom Materials from the Acoustical Society of America, *The Physics Teacher*, 2013, 51,7.

Adams, W. K., Alhadlaq, H., Malley, C., Perkins, K. K., Olson, J., Alshaya, F., Alabdulkareem, S., and Wieman, C. E., Making science simulations and websites easily translatable and available worldwide: Challenges and solutions. *Journal of Science Education and Technology*, 2012, 21, 1, 1-10.

Adams, W. K. and Wieman, C.E. Development and validation of instruments to measure learning of expert-like thinking. *International Journal of Science Education*, 2011, 33,9, 1289-1312.

Yu, B. and Adams, W. K., Scenario based think aloud protocol for probing student problem solving skills. *2010 STEM in Education Conference Proceedings.*, 2011.

Podolefsky, N. S., Adams, W. K., Lancaster, K. and Perkins, K. K. Characterizing complexity of computer simulations and implications for student learning. *Physics Education Research Conference Proceedings* 2010.

Podolefsky, N. S., Perkins, K. K., Adams, W. K., Factors Promoting Engaged Exploration with Computer Simulations. *Physical Review Special Topics – Physics Education Research* 6, 2010, 020117, 1-11.

Adams, W. K., Alhadlaq, H., Malley, C., Perkins, K. K., Olson, J., Alshaya, F., Alabdulkareem, S., and Wieman, C. E. Making on-line science course materials easily translatable and accessible worldwide: challenges and solutions. *Multimedia in Physics Teaching and Learning Proceedings*, 14, 2010, 113-120.

Adams, W. K. Student engagement and learning with PhET Interactive Simulations. *Invited Multimedia in Physics Teaching and Learning Proceedings*, 14,2010, 21-32.

Alhadlaq, H., Alshaya, F., Alabdulkareem, S., Perkins, K. K., Adams, W. K., and Wieman, C.E., Measuring student's beliefs about physics in Saudi Arabia *Physics Education Research Conference 2009 Proceedings*, 2010.

Podolefsky, N. S., Perkins, K. K., and Adams, W. K., Computer simulations to classrooms: tools for change. *Physics Education Research Conference 2009 Proceedings*, 2010.

Podolefsky, N. S., Adams, W. K., and Wieman, C. E., Student choices when learning with computer simulations. *Physics Education Research Conference 2009 Proceedings*, 2010.

Wieman, C. E., Adams, W. K., Perkins, K. K., Loeblein, T., Teaching physics using PhET Simulations. *The Physics Teacher*, 48, 2010, 286-288.

Smith, M. K., Wood, W. B., Adams, W. K., Wieman, C., Knight, J. K., Guild, N. and Su, T. T., Why peer discussion improves student performance on in-class concept questions. *Science*, 323, 2009, 122-124.

Adams, W. K., Paulson, A. and Wieman, C. E., What levels of guidance elicit engaged exploration with interactive simulations? *Physics Education Research Conference 2008 Proceedings*, 2009.

Wieman, C. E., Adams, W.K., Perkins, K.K., PhET: Simulations that enhance learning. *Science*, 322, 2008, 682-683.

Gray, K. E., Adams, W. K., Perkins, K. K., and Wieman, C. E., Students know what physicists believe, but they don't agree: A study using the CLASS survey, *Physical Review: Special Topics Physics Education Research 020106*, 2008.

Adams, W. K., Reid, S., LeMaster, R., McKagan, S. B., Perkins, K. K., Dubson, M. and Wieman, C. E., A study of educational simulations part I - engagement and learning. *Journal of Interactive Learning Research*, 12, 2008 397-419.

Adams, W. K., Reid, S., LeMaster, R., McKagan, S. B., Perkins, K. K., Dubson, M. and Wieman, C. E., A study of educational simulations part II - interface design. *Journal of Interactive Learning Research*, 12, 2008.

Barbera, J., Adams, W. K., Wieman, C. E. and Perkins, K. K., Modifying and Validating the Colorado Learning Attitudes about Science Survey for Use in Chemistry, *Journal of Chemical Education*, 85, 2008, 1435-1439.

Wieman, C. E., Perkins, K. K. and Adams, W. K., Oersted Medal Lecture 2007: Interactive simulations for teaching physics: What works, what doesn't and why. *American Journal of Physics*, 76, 2007, 4&5.

Adams, W. K. and Wieman, C. E., Problem solving skill evaluation instrument – validation studies. *Invited Physics Education Research Conference Proceedings*, 2007.

Perkins, K., Barbera, J., Adams, W.K., and Wieman, C. E., Chemistry vs. Physics: A comparison of how biology majors view each discipline, *Physics Education Research Conference Proceedings*, 2007, 883, 53.

Finkelstein, N.D., Adams, W., Keller, C., Perkins, K., Wieman, C and the PhET Team, High-Tech tools for teaching physics: the Physics Education Technology Project, *Journal of Online Teaching and Learning*, 2006, 9.

Adams, W. K., Perkins, K. K., Dubson, M., Finkelstein, N.D. and Wieman, C.E., A new instrument for measuring student beliefs about physics and learning physics: the Colorado Learning Attitudes about Science Survey *Physical Review, Special Topics - Physics Education Research*, 2006, 2, 010101, 1-14.

Finkelstein, N. D., Perkins, K., Adams, W. Keller, K, Kohl, P., Podolefsky, N., Reid, S. and LeMaster, R., When learning about the real world is better done virtually: a study of substituting computer simulations for laboratory equipment, *Physical Review, Special Topics - Physics Education Research*, 2005

Perkins, K. K., Adams, W., Finkelstein, N. D., Dubson, M., LeMaster, R., Reid, S. and Wieman, C.E., PhET: Interactive simulations for teaching and learning physics. *The Physics Teacher*, 2006, 44.

Perkins, K. K., Gratny, M.M., Adams, W.K., Finkelstein, N. D., and Wieman, C.E., Towards characterizing the relationship between students' self-reported interest in and their surveyed beliefs about physics. *Physics Education Research Conference Proceedings*, 2005

Adams, W. K., Perkins, K. K., Dubson, M., Finkelstein, N.D. and Wieman, C.E., The design and validation of the Colorado Learning Attitudes about Science Survey. *Physics Education Research Conference*, edited by Jeff Marx, P. Heron, and S. Franklin, AIP Conf. Proc., 2004

Perkins, K., Adams, W., Finkelstein, N. and Wieman, C., Correlating student beliefs with student learning using the Colorado Learning Attitudes about Science Survey. *Physics Education Research Conference*, edited by Jeff Marx, P. Heron, and S. Franklin, AIP Conf. Proc. 2004

Finkelstein, N.D., Perkins, K. P., Adams, W.K., Podolefsky, N.P., Can computer simulations replace real lab equipment? *Physics Education Research Conference*, edited by Jeff Marx, P. Heron, and S. Franklin, AIP Conference Proceedings 2004

#### **Non-Printed Material:**

Adams, W. K. Acoustics Lesson plans for Elementary, Physical Science and Introductory Physics edited by American Association of Physics Teachers Physics Teacher Resource Agents and Acoustical Society of America Activity Kit for Teachers Committee *Explore Sound Website* [www.exploresound.org](http://www.exploresound.org), 2013

Includes 52 full lesson plans and 4 assessments that have been tested in the classroom and reviewed by teachers and experts.

Adams, W. K. and Schneider, K. Acoustics Lesson plans for Lower Elementary edited by American Association of Physics Teachers Physics Teacher Resource Agents and Acoustical Society of America Activity Kit for Teachers Committee, USB Thumb drive in the Activity Kit for Teachers

Includes 7 full lesson plans and 1 assessment that have been modified from upper elementary plans that were tested in the classroom and reviewed by teachers and experts. 2012

Adams, W. K. Acoustics Lesson plans for Introductory Physics edited by American Association of Physics Teachers Physics Teacher Resource Agents and Acoustical Society of America Activity Kit for Teachers Committee, USB Thumb drive in the Activity Kit for Teachers. 2012  
Includes 14 full lesson plans, 7 laboratory exercises and 2 assessments that have been tested in the classroom and reviewed by teachers and experts.

Adams, W. K. Acoustics Lesson plans for Physical Science edited by American Association of Physics Teachers Physics Teacher Resource Agents and Acoustical Society of America Activity Kit for Teachers Committee, USB Thumb drive in the Activity Kit for Teachers. 2012.  
Includes 23 full lesson plans and 3 assessments that have been tested in the classroom and reviewed by teachers and experts.

### **Book Chapters**

Adams, W. K. Tuning Fork Discovery in Progressive Science initiative 8th grade science unit by Bill Chestnut. New Jersey Center for Teaching and Learning; New Jersey. 2013

### **In Preparation**

Wieman, C. E. and Adams, W. K. Effortful practice in learning physics-- better learning by blocking shortcuts *The Physics Teacher (in preparation)*

Armstrong, Z. B., Galovich, C. and Adams, W. K. Determining the Effectiveness of PhET Interactive Simulations as Homework. *Physical Review Special Topics (in preparation)*

Dunn, A., Jordan, C. and Adams, W. K. Force Vectors and a Snickers Bar, *The Physics Teacher (in preparation)*

Jordan, C., Dunn A. and Adams, W. K. Motion in Two Dimensions: Projectile Motion, *The Physics Teacher (in preparation)*

Adams, W. K. and Wieman, C. E. The development and validation of the Assessment of Problem Solving Skills (APSS). *Physical Review, Special Topics – Physics Education Research (in preparation)*

Adams, W. K. Using Research Based Instructional Materials: Student Perceptions of Physics and Views about Learning Physics *Journal of College Science Teaching (in preparation)*

Adams, W.K. and Gilley, B. Faculty Perceptions Survey of Teaching. *(in preparation)*

### **Invited:**

### **Professional Presentations:**

2014 Research-based assessment instruments: Design, validation and interpretation *American Physical Society March Meeting, Denver, Colorado.*

2014 Acoustical Society of America *Society of Physics Students Spring 2014 Zone 14 Meeting, Golden, Colorado.*

2014 Alternative Approaches to Assessment *UNC Assessment Luncheon, Greeley, Colorado.*

2013 Problem Solving, *Keynote for University of Nebraska Astronomy Workshop #16, Lincoln, Nebraska.*

2013 Models and Simulations with Pre-Service Elementary Teachers *American Association of Physics Teachers 2013 Summer Meeting, Portland, Oregon.*

2013 Clarifying the Force Concept Inventory. *Global Physics Department, virtual meeting.*

2013 Panel: Confessions of First-year Faculty. *American Association of Physics Teachers 2013 Winter Meeting, New Orleans, Louisiana.*

2012 Measuring the Effect of Instruction. *Acoustics 2012 Hong Kong, Hong Kong, China.*

2012 Research-based, student-tested, free educational resources, *Colloquium for the Department of Physics and Astronomy, Brigham Young University, Provo, Utah.*

2011 Hands-on acoustics for public school students. *162<sup>nd</sup> Meeting of the Acoustical Society of America, San Diego, California.*

2011 Fourier Making Waves. *162<sup>nd</sup> Meeting of the Acoustical Society of America, San Diego, California.*

2011 Possible ways to integrate PhET into your class. *Department of Engineering and Science Education Seminar, Clemson University, Clemson, South Carolina.*

2011 Possible ways to integrate simulations into your classroom. *GIREP-EPEC (Groupe International de Recherche sur l'Enseignement de la Physique –European Physics Education Conference) 2011 International Conference, Jyvaskyla, Finland.*

2011 Problem Solving Evaluation. *American Association of Physics Teachers 2011 Summer Meeting, Omaha, Nebraska.*

2011 Using Interactive Simulations to Visualize Fourier Analysis. *161<sup>st</sup> Meeting of the Acoustical Society of America, Seattle, Washington.*

2011 Factor Analysis 1-2-3 and the benefits of the Reduced-Basis Factor Analysis. *American Association of Physics Teachers 2011 Winter Meeting, Jacksonville, Florida.*

2010 PhET Interactive Simulations: Student Engagement and Learning. *American Association of Physics Teachers 2010 Summer Meeting, Portland, Oregon.*

2009 PhET Interactive Simulations. *American Association of Physics*



*Teachers New Faculty Workshop Series, Washington, D.C.*

2009 Balanced Challenges – Student Engagement and Learning? *Simon Fraser University Colloquium. Vancouver, BC Canada*

2009 Student Engagement and Learning with PhET Interactive Simulations. *International Workshop on Multimedia in Physics Teaching and Learning – 14<sup>th</sup>, Udine, Italy. Plenary Speaker.*

2009 A Balance – Effective Levels of Guidance for Student Engagement and Learning. *American Physical Society American Association of Physics Teachers Physics and Astronomy New Faculty Workshop Series Reunion Meeting at American Physical Society March Meeting. Pittsburg, PA.*

2009 Balance – Level of Guidance for Learning and Engagement. *University of British Columbia. Vancouver, BC Canada*

2008 Attending to more than Content Mastery *TIGER/CIRTL Workshop Series, University of Colorado, Boulder, CO.*

2008 A Study of Educational Simulations – Interface Design for Engagement and Learning. *American Association of Physics Teachers Summer Meeting, Edmonton, AB, Canada.*

2008 A Study of Educational Simulations – Interface Design for Engagement and Learning. *Gordon Research Conference: Physics Research and Education - Computation and Computer-Based Instruction. Providence, RI.*

2008 Problem Solving: Understanding and evaluating the many component skills, processes and beliefs. *University of Northern Colorado, Physics Department Seminar Series, Greeley, CO.*

2008 Problem Solving: Understanding and evaluating the many component skills, processes and beliefs. *University of British Columbia, Vancouver, BC Canada.*

2007 Physics Education Research. *University of Northern Colorado, Chemistry Education Research Seminar, Greeley, CO.*

2006 Problem Solving Evaluation Instrument – Validation Studies. *Physics Education Research Conference, Syracuse, NY.*

2005 Physics Education Technology Project, *University of Northern Colorado, Physics Department Seminar Series, Greeley, CO.*

**Workshops:**

2013 The Value and Limitations of Models in Science *University of Nebraska Astronomy Workshop #16, Lincoln, NE.*

2013 PhET Interactive Simulations for the Classroom *University of*

*Nebraska Astronomy Workshop #16, Lincoln, NE.*

2013 Sound and Music, Ways to Teach It, *American Association of Physics Teachers 2013 Summer Meeting, Portland, OR.*

2013 Sound and Music, Ways to Teach It, *American Association of Physics Teachers 2013 Winter Meeting, New Orleans, LA.*

2012 Sound and Music for 7<sup>th</sup> grade girls *164<sup>th</sup> Meeting of the Acoustical Society of America, Kansas City, KS.* Presenter

2012 Sound and Music for 7<sup>th</sup> grade boys *164<sup>th</sup> Meeting of the Acoustical Society of America, Kansas City, KS.* Presenter

2012 Listen Up! And Get Involved. Girl Scout outreach held at the *164<sup>th</sup> Meeting of the Acoustical Society of America, Kansas City, KS.* Presenter

2012 Sound and Music, Ways to Teach It, *American Association of Physics Teachers Summer 2012 Conference, Philadelphia, PA.* Presenter

2012 Labs at Many Levels, *American Association of Physics Teachers Summer 2012 Conference, Philadelphia, PA.* Co-Presenter

2011 Listen Up! And Get Involved. Girl Scout outreach held at the *162<sup>nd</sup> Meeting of the Acoustical Society of America San Diego, CA.* Presenter.

2011 Sound and Music for Middle School *American Association of Physics Teachers/Physics Teacher Resource Agent Summer Leadership Institute*

2011 Education Statistics – ANOVA to the rescue! *Carl Wieman -Science Education Initiative STLF Group*

2010 Student Interviews - Test validation and problem solving *Carl Wieman -Science Education Initiative STLF Group*

2010 Education Statistics – z-scores, t-tests and correlations *Carl Wieman - Science Education Initiative*

2010 Education Statistics – Chi-squared analysis *Carl Wieman – Science Education Initiative*

2010 Education Statistics I – Mean, z-test, uncertainty and correlations *Science Education Initiative Training Series*

2010 Education Statistics II – T-test or ANOVA? *Science Education Initiative Training Series*

2010 Education Statistics III – Empirical Probability *Science Education Initiative Training Series*

2010 Student Interviews *Carl Wieman – Science Education Initiative STLF Group*

2009 Teacher and Researcher: Designing research studies around PhET's interactive simulations. (w/ Perkins and Paulson) *American Association of*

*Physics Teachers Summer National Meeting 2009. ½ day workshop.*

2009 How to create an effective pre/post test for your TAR project.  
*TIGER/CIRTL Workshop Series Graduate Teacher Program University of Colorado (w/Perkins invited 1 hour)*

2008 Education Statistics I – Mean, z-test, uncertainty and correlations *Carl Wieman – Science Education Initiative NOJO group.*

2008 Education Statistics III – Empirical Probability *Science Education Initiative Training Series*

2008 Exploring Easy and Effective ways to use PhET's web-based interactive simulations. (w/ Podolefsky and Paulson) *American Association of Physics Teachers Summer National Meeting. ½ day workshop.*

2008 Education Statistics I – Mean, z-test, uncertainty and correlations *Carl Wieman – Science Education Initiative STLF group.*

2008 Education Statistics II – T-test or ANOVA? *Science Education Initiative Training Series*

2008 Education Statistics I – Mean, z-test, uncertainty and correlations *Science Education Initiative Training Series*

2007 Writing Inquiry Lessons using PhET simulations. (w/ Loeblein, Perkins and McKagan) *National Science Teachers Association Area Conference.* (1 hour)

2007 Exploring Easy and Effective ways to use PhET's web-based interactive simulations. (w/ Perkins, McKagan and Dubson) *American Association of Physics Teachers Summer National Meeting 2007. ½ day workshop.*

2007 Attending to more than Content Mastery (w/Perkins, Pollock and Finkelstein) *Physics Teacher Education Coalition 2007 Conference.* (1 ½ hours)

2007 Exploring Easy and Effective ways to use PhET's web-based interactive simulations. (w/ Perkins and McKagan) *American Association of Physics Teachers Winter National Meeting 2007. ½ day workshop.*

2006 Exploring Easy and Effective ways to use PhET's web-based interactive simulations. (w/ Perkins and Loeblein) *American Association of Physics Teachers Summer National Meeting 2006. ½ day workshop.*

2006 Physics Education Technology Project. *Thompson Valley High School Professional Development Workshop.* (2 hours invited)

#### **Papers/Professional Society Poster Sessions:**

2014, Adams W. K. and Jordan, C. The Gender Gap in College Physics

*UNC 2014 Assessment Fair, Greeley, CO.*

2014, Adams W. K., Jordan, C, Dietz, R. D. and Semak, M.R., Reducing the gender Gap in College Physics *American Association of Physics Teachers 2014 Winter Meeting, Orlando, FL.*

2014, Semak, M. R., Dietz, R. D., Adams W. K., Jordan, C., Clarifying the FCI via Think-aloud Interviews *American Association of Physics Teachers 2014 Winter Meeting, Orlando, FL.*

2013, Adams, W. K. 30 Demos in 50 Minutes *National Science Teachers Association Regional Conference, Denver, CO.*

2013, Adams, W. K., Dietz, R. D. and Semak, M. R. Listening to Students: How We Investigate the FCI *Physics Education Research Conference 2013, Portland, OR.*

2013, Adams, W. K., Dietz, R. D. and Semak, M. R. Exploring Student Reactions to a Modified Force concept Inventory *American Association of Physics Teachers 2013 Summer Meeting, Portland, OR.*

2013, Adams, W. K. Generalizing Musical Instruments *American Association of Physics Teachers 2013 Winter Meeting, New Orleans, LA.*

2013, Adams, W. K., Dietz, R. D., Semak, M. R., Willis, C. W. Consequences of Attempted Clarifications of Force Concept Inventory Questions *American Association of Physics Teachers 2013 Winter Meeting, New Orleans, LA.*

2012, Reinsvold, R. Reinsvold, L., Adams W, Galovich, C. and Sexton, J. Preparing the Next Generation of Science Teachers *Colorado Science Conference, Denver, CO.*

2012, Adams, W. K. Problem Solving Assessment 164<sup>th</sup> Meeting of the *Acoustical Society of America, Kansas City, MO.*

2012, Adams, W. K. Student Conceptual Understanding of Electrostatic Potential and Views About Learning Physics. *Physics Education Research Conference, 2012, Philadelphia, PA.*

2012, Armstrong, Z. B., Galovich, C. and Adams, W. K. Determining the Effectiveness of PhET Interactive Simulations as Homework. *American Association of Physics Teachers Conference, 2012, Philadelphia, PA.*

2012, Adams, W. K., Dietz, R. D., Semak, M. R. and Willis, C. W. Force Concept Inventory Interviews. *American Association of Physics Teachers Conference, 2012, Philadelphia, PA.*

2012, Galovich, C., Adams, W. K. and Reinsvold, R. Secondary Teacher Preparation at the University of Northern Colorado. *American Association of Physics Teachers Conference, 2012, Philadelphia, PA.*

2012, Adams, W. K. Acoustics Materials: Activity Kit for Teachers. *American Association of Physics Teachers Conference, 2012, Philadelphia, PA.*

2012, Adams, W. K., Barbera, J., Perkins, K. and Wieman, C. CLASS – Beyond Content: Insights Gained by Assessing Student Perceptions and beliefs of Physic and Chemistry. *2012 UNC Assessment Fair Showcase, Greeley, CO.*

2012, Adams, W. K. and Galovich, C. Simulations vs. Real equipment in physics labs. *American Association of Physics Teachers Conference, 2012, Ontario, CA.*

2012, Adams, W. K. Educational materials created by the Acoustical Society of America. *American Association of Physics Teachers Conference, 2012. Ontario, CA*

2012, Dietz, R. D., Adams, W. K., Semak, M. R., Willis, C. W. (2012). What's so special about question 23? *American Association of Physics Teachers Conference, 2012. Ontario, CA.*

2011, Adams, W. K. Who is an Acoustician? *162<sup>nd</sup> Meeting of the Acoustical Society of America, San Diego, CA.*

2011, Adams, W. K. Education Outreach Efforts of the Acoustical Society of America. *American Association of Physics Teachers Conference, 2011. Omaha, NE.*

2011, Adams, W. K. Explore Sound. *American Association of Physics Teachers Conference, 2011. Omaha, NE.*

2011, Alhadlaq, Perkins, Adams, Al-Dossary, Perceptions and Beliefs of Undergraduate Physics Majors Toward Physics in Saudi Arabia. *American Association of Physics Teachers Conference, 2011. Omaha, NE.*

2011, Adams, W. K. A research-based approach to teaching the basic concepts of musical instruments with low cost instruments. *161<sup>st</sup> Meeting of the Acoustical Society of America, Seattle, WA.*

2011, Adams, W. K. Integrating interactive simulations into demo sessions to help students visualize the invisible. *161<sup>st</sup> Meeting of the Acoustical Society of America, Seattle, WA.*

2011, Adams, W. K. Education Outreach Efforts of the Acoustical Society of America. *American Association of Physics Teachers Colorado/Wyoming Section Meeting, Denver, CO.*

2011, Adams, W. K. and Gilley, B. Insights into faculty perceptions of teaching. *American Association of Physics Teachers Conference 2011, Jacksonville, FL.*

2010, Yu, B. and Adams, W. K. Scenario based think aloud protocol for probing student problem solving skills. *2010 STEM in Education Conference, Brisbane, Australia.*

2010, Lancaster, K, Adams W., Parson, R. and Perkins, K., PhET interactive simulations: New tools for teaching the particulate nature of matter. *American Chemical Society 2010, San Francisco, CA.*

2010, Perkins, K.: Lancaster, K., Parson, R., and Adams, W., PhET Interactive Simulations: Free, research-based resources for teaching and learning chemistry.

2010, Adams, W. K. and Gilley, B. Development of a Faculty Perceptions Survey. *American Association of Physics Teachers Conference 2010, Portland, OR.*

2010, Podolefsky, N., Adams, W. K., Lancaster, K. and Perkins, K.K. Complexity of computer simulations: Implications for sim design and learning. *American Association of Physics Teachers Conference 2010, Portland, OR.*

2010, Perkins, K. K., Alhadlaq, H., Adams, W. K., Alshaya, F., Alabdulkareem, S., and Wieman, C. E. A CLASS study of students' perceptions of physics in Saudi Arabia and the U.S. *American Association of Physics Teachers Conference 2010, Portland, OR.*

2010, Perkins, K., Adams, W., Alhadlaq, H., Podolefsky, N., Wieman, C. and the rest of the PhET Team New developments in the PhET Interactive Simulations Project. *American Association of Physics Teachers Conference 2010, Portland, OR.*

2009, Smith, M. K., Wood, W. B., Adams, W. K., Wieman, C. E., Knight, J. K., Guild, N., Su, T. T. Why Peer Discussion Improves Student Performance on In-class Concept Questions. *Society for Developmental Biology meeting in San Francisco, CA.*

2009, Smith, M. K., Wood, W. B., Adams, W. K., Wieman, C. E., Knight, J. K., Guild, N., Su, T. T. Why Peer Discussion Improves Student Performance on In-class Concept Questions. *Biology Scholars Program (American Society for Microbiology), Washington, D.C.*

2009, Paulson, A. M., Perkins, K.K., Adams, W.K., PhET Simulations: Should We Show the invisible? *Physics Education Research Conference 2009: Ann Arbor, MI*

2009, Podolefsky, N.P., Adams, W.K., Wieman, C.E., Student Choices when Learning with Computer Simulations. *Physics Education Research Conference 2009: Ann Arbor, MI*

2009, Paulson, A. M., Perkins, K.K., Adams, W.K., PhET Simulations: Should We Show the invisible? *American Association of Physics Teachers Conference 2009: Ann Arbor, MI*

2009, Podolefsky, N.S., Adams, W.K., Perkins, K.K. Analogy Use in PhET Simulation Design. *American Association of Physics Teachers Conference 2009: Ann Arbor, MI*

2009, Podolefsky, N. P., Adams, W. K. Research Frontiers for PhET Simulations. *Foundations and Frontiers of Physics Education Research, Bar Harbor, Maine*

2009, Smith, M., Wood, W., Adams, W., Wieman, C., Knight, J., Guild, N. and Su, T.T. Why peer discussion improves student performance on in-

class concept questions. *Science Education Initiative End of Term Event., Boulder, CO.*

2009, Smith, M., Lykke-Anderson, J., Adams, W., Wood, W., Knight, J. and Krauter, K. A combination of peer discussion and instructor explanation provides the most effective way for students to learn from in-class concept questions. *Science Education Initiative End of Term Event., Boulder, CO.*

2009, Adams, W.K., & Wieman, C. E. Colorado Assessment of Problem Solving (CAPS) – Identifying student's problem solving skills. *2009 American Physical Society April Meeting, Denver, CO.*

2009, Podolefsky, N., Adams, W., Perkins, K. Using Computer Simulations to Foster Concept Generalization. *2009 American Physical Society April Meeting, Denver, CO.*

2009, Paulson, A., Perkins, K., Adams, W. Research on student use of computer simulations. *2009 American Physical Society April Meeting, Denver, CO.*

2009, Paulson, A., Adams, W.K. Physics Education Research: A study of student engagement. *University of Northern Colorado Physics Seminar Series, Greeley, CO.*

2009, Barbera, J., Adams, W. K., Perkins, K. K. and the rest of the PhET Team. Free simulations for the teaching and learning of chemistry: The PhET project. *American Chemical Society 2009 National Meeting, Salt Lake City, UT.*

2008, Smith, M. K., Wood, W. B., Adams, W. K., Wieman, C. E., Knight, J. K., Guild, N., Su, T. T. Why Peer Discussion Improves Student Performance on In-class Concept Questions. *The American Society for Cell Biology in 2008, San Diego, CA.*

2008, Adams, W.K., McKagan, S., Perkins, K., Reid, S., Wieman, C. Study of Computer Simulations – Interface Design for Engagement Learning and Assessment. *American Association of Physics Teachers Conference 2008: Edmonton, AB Canada.*

2008, Paulson, A., Adams, W.K., Perkins, K., Research on Effective Features of Simulations and Classroom Use Implications. *American Association of Physics Teachers Conference 2008: Edmonton, AB Canada.*

2008, Adams, W.K., Wieman, C.E. Identification of Specific cognitive Processes Used for In-Depth Problem Solving. *American Association of Physics Teachers Conference 2008: Edmonton, AB Canada.*

2008, Paulson, A., Adams, W.K., Perkins, K.K. New Research on Effective Features of Interactive Simulations. *American Association of Physics Teachers Conference 2008: Edmonton, AB Canada.*

2008, Paulson, A., Perkins, K., Adams, W.K., Wieman, C., and the rest of the PhET Team New Developments in PhET's Interactive Simulations Project. *American Association of Physics Teachers Conference 2008:*

*Edmonton, AB, Canada.*

2008, McKagan, S.B., Perkins, K.K., Adams, W.K., Dubson, M., Malley, C., Reid, S., LeMaster, R., Wieman, C.E. Developing and Researching PhET Simulations for Teaching Quantum Mechanics. *American Association of Physics Teachers Conference 2008: Edmonton, AB, Canada.*

2008, Adams, W.K., Wieman, C.E. Colorado Assessment of Problem Solving (CAPS) – Design and Validation. *American Association of Physics Teachers Conference 2008: Edmonton, AB, Canada.*

2008, Adams, W.K., Paulson, A., Wieman, C.E. What Levels of Guidance Promote engaged Exploration with Interactive Simulation? *Physics Education Research Conference 2008: Edmonton, AB, Canada.*

2008, Paulson A., Adams, W. K., Perkins, K. K., Wieman, C.E. The Physics Education Technology (PhET) Project (2008) *International Society for Design and Development in Education, Egmond aan Zee, Netherlands*

2008, Adams, W.K. A study of Educational Simulations – Interface Design for Engagement and Learning. *2008 Gordon conference on Physics Research and Education.*

2007, Adams, W.K., Wieman, C.E. Problem Solving Skills Hold Across Discipline. *American Association of Physics Teachers Conference 2007: Greensboro, NC.*

2007, Adams, W.K., Reid, S., LeMaster, R., McKagan, S., Perkins, S., Wieman, C. Study of Educational Simulations? Interface Design for Engagement and Learning. *American Association of Physics Teachers Conference 2007: Greensboro, NC.*

2007, Adams, W.K., Wieman, C.E. Physics Problem Solving Skills and Evaluation. *American Association of Physics Teachers Conference 2007: Greensboro, NC.*

2007, Keller, C., Adams, W.K., Perkins, K., Wieman, C. New Developments in the PhET Interactive Simulations. *American Association of Physics Teachers Conference 2007: Greensboro, NC.*

2007, Adams, W.K., Wieman, C.E. Physics Problem Solving Component Skills and Evaluation. *Physics Education Research Conference 2007: Greensboro, NC.*

2007, Adams, W., Wieman, C. Validation Studies of a Physics Problem Solving Survey. *American Physical Society March Meeting, Denver, CO.*

2007, Perkins, K. K., Adams, W.K., Gratny, M., Pollock, S. J., Wieman, C. E. Studying the importance of students' beliefs in physics education. *American Physical Society March Meeting, Denver, CO.*

2007, Perkins, K. K., Adams, W.K., Gray, K. E., Gratny, M., Pollock, S. J., Wieman, C. E. Correlating students' beliefs about physics with learning, retention, and recruitment. *American Physical Society March Meeting,*



Denver, CO.

2007, Perkins, K. K., Adams, W.K., Gratny, M., Pollock, S. J., Wieman, C. E. Correlating students' beliefs about physics with learning, retention, and recruitment. *American Physical Society March Meeting, Denver, CO.*

2007, Gray, K. E., Adams, W.K., Wieman, C. E., Perkins, K. K., Student's Opinions of Physicists' Beliefs about Physics Versus Their Own. *American Physical Society March Meeting, Denver, CO.*

2007, Gray, K. E., Adams, W.K., Wieman, C. E., Perkins, K. K., Do Students Know What Physicists Think About Physics? *American Physical Society March Meeting, Denver, CO.*

2007, Adams, W.K., Reid, S., LeMaster, R., McKagan, S., Perkins, K., Wieman, C. Study of Interface Design for Engagement and Learning with Educational Simulations. *American Association of Physics Teachers: Seattle, WA.*

2007, Wieman, C. E., Perkins, K. K. and Adams, W. K., Oersted Medal Lecture 2007: Interactive Simulations for teaching physics: What works, what doesn't and why *American Association of Physics Teachers: Seattle, WA.*

2006, Adams, W.K., Wieman, C.E. Problem Solving Skill Evaluation Instrument – Validation Studies. *Physics Education Research Conference 2006: Syracuse, NY*

2006, Adams, W.K., Perkins, K.P., Barbera, J., Wieman, C.E. Chemistry vs. Physics: A Comparison of How Biology Majors View Each Discipline. *Physics Education Research Conference 2006. Syracuse, NY.*

2006, Adams, W.K., Wieman, C.E. Validation Studies of the Colorado Physics Problem Solving Survey. *American Association of Physics Teachers Conference 2006: Syracuse, NY.*

2006, Adams, W.K., Reid, S., LeMaster, R., Perkins, K.K., Podolefsky, N., Wieman, C.E., Interface Design Guidelines: A Study of Student Learning. *American Association of Physics Teachers Conference 2006: Syracuse NY.*

2006, Gray, K.E., Perkins, K.K., Adams, W.K., Wieman, C.E., Do Students Know What Physicists Think About Physics? *American Association of Physics Teachers Conference 2006: Syracuse, NY.*

2006, Perkins, K.K., Adams, W.K., Quinn, E., Wieman, C.E., The Evolution of Students' Beliefs and interest in Physics *American Association of Physics Teachers Conference 2006: Syracuse, NY.*

2006, Perkins, K.K., McKagan, S., Adams, W.K., Dubson, M., Harlow, D., Koch, L. Loeblein, P., Wieman, C.E. and the rest of the PhET Team., New Developments in the PHET Interactive Simulations. *American Association of Physics Teachers Conference 2006: Syracuse, NY.*

2006, McKagan, S., Perkins, K.K., Adams, W.K., Harlow, D., Dubson, M., Malley, C., Reid, S., LeMaster, R. Wieman, C.E., Teaching Quantum

Mechanics with PHET Simulations. *American Association of Physics Teachers Conference 2006: Syracuse, NY.*

2005, Adams, W.K., Perkins K. P., Podolefsky, N.P, Finkelstein, N.D., and Wieman, C.E., Men and women know experts' beliefs about science, but disagree. *American Physical Society 4 corners meeting: Boulder, CO.*

2005, Perkins, K.P., Adams, W.K., Pollock, S.J., Finkelstein, N. D., and Wieman, C.E., Correlating Students' Beliefs about Physics with Learning, Retention and Recruitment. *American Physical Society 4 corners meeting: Boulder, CO.*

2005, Adams, W.K., Perkins K. P., Podolefsky, N.P, Finkelstein, N.D., and Wieman, C.E., Men and women know experts' beliefs about science, but disagree. *American Association of Physics Teachers Summer Meeting: Salt Lake City, UT.*

2005, Adams, W.K., Perkins, K.P. and Wieman, C.E., A new Statistical Analysis for Determining Survey Categories *American Association of Physics Teachers Summer Meeting: Salt Lake City, UT.*

2005, Adams, W. K. and Wieman, C. E., Creating a Physics Problem Solving Survey. *American Association of Physics Teachers Summer Meeting: Salt Lake City, UT.*

2005, Perkins, K.P., Adams, W.K., Maytag, C., and Wieman, C.E., Using PhET Simulations in Class: Helpful Guidance and a User Database. *American Association of Physics Teachers Summer Meeting: Salt Lake City, UT.*

2005, Perkins, K.P., Adams, W.K., Pollock, S.J., Finkelstein, N. D., and Wieman, C.E., Correlating Students' Beliefs about Physics with Learning, Retention and Recruitment. *American Association of Physics Teachers Summer Meeting: Salt Lake City, UT.*

2005, Perkins, K.P., Barbera, J., Adams W.K., Pollock, S.J., Finkelstein, N. D. and Wieman, C.E., Studying the Importance of Students' Beliefs in Physics and Chemistry Education. *American Association of Physics Teachers Summer Meeting: Salt Lake City, UT.*

2005, Perkins, K. K., Gratny, M.M., Adams, W.K., Finkelstein, N. D., and Wieman, C.E., Towards characterizing the relationship between students' interest in and their beliefs about physics. *Physics Education Research Conference.*

2005, Adams, W.K. and Wieman, C.E., Problem solving skills and evidence of their independence and transferability. *Physics Education Research Conference.*

2005, Perkins, K.P., Adams, W.K., Pollock, S., Finkelstein, N.D., and Wieman, C.E., Correlating Students' Beliefs about Physics with Students' Learning. *American Association of Physics Teachers Winter Meeting: Albuquerque, NM.*

2005, Perkins, K.K., Adams, W.K., Finkelstein, N.D., Reid, S., LeMaster, R.,

- Dubson, M., Podolefsky, N. and Wieman, C.E., Incorporating PhET Simulations into Courses and Impacts on Student Learning. *American Association of Physics Teachers Winter Meeting: Albuquerque, NM.*
- 2004, Adams, W.K., Perkins, K.P., Finkelstein, N. D., and Wieman, C.E., The Physics Education Technology Project: Research-Based Design Features of Web-based Simulations. *Teaching with Technology Conference: Boulder, CO.*
- 2004, Adams, W. K., Perkins, K. P., Finkelstein, N.D., LeMaster, R., Reid, S., Dubson, M., Podolefsky, N.P. and Wieman, C.E. Research-Based Design Features of Web-Based Interactive Simulations. *American Association of Physics Teachers Summer Meeting: Sacramento, CA.*
- 2004, Adams, W.K., Finkelstein, N.D. and Wieman, C., Using the Colorado Learning Attitudes about Science Survey to Probe Students' Attitudes and Beliefs About Reality. *American Association of Physics Teachers Summer Meeting: Sacramento, CA.*
- 2004, Adams, W. K., Dubson, M., Finkelstein, N.D. and Wieman, C.E. The Design and Validation of the Colorado Learning Attitudes about Science Survey. *American Association of Physics Teachers Summer Meeting: Sacramento, CA.*
- 2004, Perkins, K.P., Adams, W.K., Finkelstein, N.D., and Wieman, C.E. Learning Physics with Simulations: The Role of Interactivity, Animation and Context. *American Association of Physics Teachers Summer Meeting: Sacramento, CA.*
- 2004, Adams, W. K., Perkins, K. K., Dubson, M., Finkelstein, N.D. and Wieman, C.E. The Design and Validation of the Colorado Learning Attitudes about Science Survey. *Physics Education Research Conference.*
- 2004, Perkins, K., Adams, W.K., Pollock, S., Finkelstein, N. and Wieman, C. Correlating Student Attitudes with Student Learning Using the Colorado Learning Attitudes about Science Survey. *Physics Education Research Conference.*
- 2004, Finkelstein, N.D., Perkins, K. P., Adams, W.K., and Kohl, P. Can Computer Simulations Replace Real Lab Equipment in Undergraduate Laboratories? *Physics Education Research Conference.*
- 2004, Podolefsky, N.P., Adams, W.K. and Finkelstein, N.D. Analogical Scaffolding of Abstract Ideas in Physics. *Physics Education Research Conference.*
- 2001, Mallory, Kendall, Adams, Wendy. The Physics of Turns in Classical Dance. *American Association of Physics Teachers Winter Meeting: San Diego, CA.*
- 2001, Mallory, Kendall and Adams, Wendy. An Advanced Engineering Course for the Physics Major. *American Association of Physics Teachers Winter Meeting: San Diego, CA.*
- 1996, Adams, Wendy. Lead Graduate Teacher Program. *National*

*Convocation on Science and Engineering Doctoral Education organized by the National Academy of Sciences, National Academy of Engineering and Institute of Medicine: Washington, D.C..*

1994, Anderson, Wendy and Mallory, Kendall, Electron band Structure of polyacetylene in the presence of a random potential energy field, *American Association of Physics Teachers Winter Meeting: San Diego, CA.*

1993, Anderson, Wendy and Mallory, Kendall. Study of a Two-Element Nonlinear Pendulum. *American Physical Society April Meeting: Washington, D.C.*

1993 Anderson, Wendy and Mallory, Kendall. Study of a Two-Element Nonlinear Pendulum. *Colorado/Wyoming Academy of Science: Denver, CO.*

**Funded Projects:**

2013 UNC Summer Support Initiative category 2: Research, Scholarship and Creative Works: Open Focus. \$3,000.

2013 UNC Grant-writing Incentive Program (GRIP) \$2,000.

2010 - 2013 Perkins, Adams, Wieman, Schwartz. NSF-DRK12 *Expanding PhET Interactive Science Simulations to Grades 4-8: A Research Based Approach.* \$1,997,695 Awarded 9/2010 Transferred Adams and Wieman to Podolefsky and Dubson

2009-2010 Jona, Wieman, Adams, Perkins, Sicker, Blumenthal, Long and McGee. NSF-ITEST, *Collaborative Research: Conference on Cyberlearning Tools for STEM Education*, CU side: \$24,410.

2008-2011 Adams, Perkins, Hewlett Foundation , *PhET Interactive Simulations*, \$1,100,000.

2008-2010 Adams, Wieman, King Saud University, *PhET ECSME Initiative*, \$500,000.

2008-2011 Perkins (Adams Sr. Personnel) NSF-CCLI, *Physics and Chemistry Education Technology Project*, \$498,765.

2008 Wieman, Adams, Microsoft Research, *Towards the next generation of simulations for learning.* \$50,000.

2008 Adams, Texas Instruments, *Physics Education Technology Project*, \$50,000.

**Professional Consultation:**

2010 – 2012  
Massachusetts Institute of Technology, Boston, MA  
**External Evaluator** NSF DUE Grant: Assessing, Improving, and Guiding Users to NSDL Resources, Dave Pritchard – PI

2008 – 2012  
University of British Columbia, Vancouver, British Columbia, Canada  
**Education Research Consultant**

- Provide advice and guidance to faculty and Science Teaching and Learning Fellows on research techniques, assessing effectiveness of various teaching methods, identification of outcomes appropriate for publication and data analysis including significance testing within the Chemistry, Computer Science, Earth and Ocean Science, Education, Life Sciences, Mathematics, Physics and Statistics Departments. Advised over twenty post doctoral fellows, 12 faculty and several graduate and undergraduate students on projects ranging from a quantitative method to evaluate student engagement in the classroom to the development and validation of a Fundamentals Ecology Concept Assessment.

2010 – 2011

University of Colorado, Boulder, Colorado

**Education Research Consultant**

- Provide advice and guidance to faculty and Science Teaching Fellows on research techniques, assessing effectiveness of various teaching methods, identification of outcomes appropriate for publication and data analysis including significance testing within the Chemistry, Geosciences, Integrative Physiology, Molecular and Developmental Biology and Physics Departments. Advised over twenty post doctoral fellows, 12 faculty and several graduate and undergraduate students on projects ranging from the design and development of formative assessments in the classroom to using a show of hands instead of clickers.

**Professional Association Participation:**

Member of the **American Institute of Physics Advisory Committee on Physics Education** 2011-2014

American Association of Physics Teachers (1992 – present)

**Committee on Teacher Preparation: Vice-Chair** 2014, Member: (2013 - 2015), Friend (2011 – 2012)

Session Presider/Organizer Invited session 8/2014 Preparing Physics teachers to Teach in Diverse Environments

Session Presider/Organizer Invited session 1/2014 Low Enrollment Teacher Preparation Programs

Session Presider/Organizer Invited Session 7/2013, Preparation of Future Elementary Teachers.

Session Presider/Organizer Invited session 1/2013, Physics Preparation for Pre-service Elementary Teachers.

**Physics in High Schools Committee, Friend:** (2012 - )

Panel Presider/Organizer Invited 1/2015 30 Demos in 60 Minutes

**Physics in Pre-High School Education, Friend:** (2011 – )

Committee on Educational Technologies, Friend (2009 - )

Research in Physics Education Committee (2009 - )

Session Presider: Methods of Teacher Evaluation 2/2012

American Physical Society (1995-present)

2014 Elected **APS-AAPT Member on the Executive Committee of the American Physical Society's Forum on Education**

Acoustical Society of America  
Associate Member (2010 – 2011)  
Full Member (2012 - 2014)

Education Coordinator (2010 – 2013)  
Committee on Online Services (2011 - 2012)  
Adhoc Committee Sounds Project (2011 – 2013)  
Committee on Archives and History (2011 – 2013)  
Adhoc committee for the Activity Kits for Teachers (2010 - 2013)  
Women in Acoustics Committee (2010 - 2013)  
Public Relations Committee (2010 – 2013)  
Committee for International Research and Education (2010 - 2013)  
Adhoc committee for the Website for kids (2010 - 2011)  
Education Committee (2010 - 2013)  
Session Chair – invited session: Engaging and Effective Teaching  
Methods in Acoustics (12/2013)  
Session Chair – invited session: Engaging and Effective Teaching  
Methods in Acoustics (5/2012)  
Session Chair – invited session: Engaging and Effective Teaching  
Methods in Acoustics (10/2012)

Advisory board member for the Discovery of Sounds In The Sea  
([www.DOSITS.org](http://www.DOSITS.org)) project 2011- 2012

Reviewer National Science Foundation 2012 & 2013

Referee

Journal of the Learning Sciences 2013 -  
International Journal of Science Education 2012 -  
Science Education 2011 -  
Journal of the Acoustical Society of America 2011 -  
Computers & Education 2010 -  
Journal of Engineering Education 2009 -  
American Journal of Physics 2008 -  
Physical Review – Special Topics, PER 2006 -  
Physics Education Research Conference Proceedings, 2004 -

Reviews – Chemistry in Your Life by Baird and Gloffke,

- College Physics by Coletta and Science Teaching Reconsidered: A Handbook by Committee on Undergraduate Science Education
- 2010 Assessment handbook, Assessing for Learning.

Expanding Your Horizons – American Society of University Women

**Community Service:**

2013  
Double Demo Show, University High School Chemistry Students arranged with the Office of Admissions

2013

Demo show/tutorial for 6<sup>th</sup> and 7<sup>th</sup> grade Bella Romero Dream Team arranged by the Office of Admissions

2013

Longs Peak Science Fair – 30 demos in 50 minutes with secondary methods students

2011-2013

ExploreSound.org website.

2011 – 2013

Sound and Music Teacher Activity Kit, distributed internationally to 270 recipients in total.

2012

Colorado Science Conference, Denver, CO

2012

USA Science and Engineering Festival, Washington, DC

2011 - 2012

Listen Up! And Get Involved. Girl Scout Outreach, Seattle, WA, San Diego, CA, Kansas City, MO

2011

Our Ears! *Little Shop of Physics Open House*, Fort Collins, CO

2010

Grader for 6<sup>th</sup> grade math Union Colony Charter School, Greeley, CO

2008 2010

Coach/Organizer Mountain View Academy Elementary and Middle School Chess Club (26 - 1<sup>st</sup> – 8<sup>th</sup> graders.), Greeley, CO

Science Fair Judge – Broomfield Heights Middle School, Broomfield, CO

2005

Odyssey Of The Mind Coach for problem solving team. (6 - 3<sup>rd</sup> graders), Greeley, CO

**University Service:**

University of Northern Colorado

2013 -

Mines/UNC Partnership Design Committee

2013

Colorado Teacher Preparation Symposium Organizing Committee

2013 –

Colorado Department of Higher Education STEM Action Committee

2013

Chair - Secondary Methods Redesign sub-committee

2013 –

STEP Revision Team

2013  
PTEP Faculty Retreat January  
PTEP Faculty Retreat June

2013  
Physics Department  
    Preview Day Major Presentation  
    Transfer Advising  
    Advise Students

2013  
Work with Audiology on new Interactive Acoustics Course

2013  
Work with Biology to evaluate physics preparation of students for the MCAT

2012 - 2013  
SCED (SCience EDucation) sub-committee to evaluate the Graduate Interdisciplinary Degree Program M. A. Natural Sciences K-12 Teaching Emphasis.

2012  
Noyce Advisory Board Meeting – attended in lieu of school director

2012  
Physics Department  
    Preview Day Major Presentation  
    Transfer Advising  
    Filled in for Science 465 for Courtney Willis (5 classes)  
    Advise Students  
    Clean/ Organize entrance and part of Catecombs

2011 -  
SCED (SCience EDucation) committee member

2011 -  
SCED secondary education sub-committee member

2011  
Physics Department  
    Filled in for Phys 240 for Courtney Willis  
    Cleaned and organized introductory lab storeroom

2003  
Physics Department  
    Committee for redesign of UNC physics curriculum  
  
    Walsh, R., Galovich, C. and Adams, W. Physics 220 and 221 laboratory manual, *University of Northern Colorado*.  
  
    Assisted with Physics Department moves during renovation of Ross Hall  
    Covered Phys 240/220/241/221 labs for others  
    Conducted help sessions for Physics 240  
    Advise undergraduates  
    Assisted in keeping Physics Department website updated  
    Organized introductory lab equipment and cleaned stock room



1996 – 2002

Physics Department

Tutored individuals struggling with Modern Physics

Physics 240 Help Sessions

Advise Undergraduate Physics Majors

1993-1994

Committee for UNC Departmental Evaluation (student member)

University of Colorado, Boulder, Colorado

2009-2010

Chair of committee to rework Human Subjects Research practices for Science Education.

Physics Department

Filled in for Phys 1020 for Paul Beale

**Students Mentored:**

Postdoctoral:

Archie Paulson (PhET Interactive Simulations - Physics, 2007 – 2009)

Noah Podolefsky (PhET Interactive Simulations - Physics, 2008 – 2010)

Kelly Lancaster (PhET Interactive Simulations - Chemistry, 2009 – 2010)

PhD. Students:

2013 - , Jeffrey King, Math

Master's Students:

2013 - , Kristine Bibbey, The Effect of Computer Simulations on Learning High School Physics, Advisor

2011-2012, Zachary Armstrong, Determining the Effectiveness of PhET Simulations as Homework, co-advisor

2012 - 2013, Paul Schwartz, Examining the item functioning of the Chemistry Concepts Inventory, committee member

2010, David Patrick, committee member

Undergraduate:

2013 – Connor Jordan, Force Concept Inventory and Reducing the Gender Gap in College Physics

2012-2013 Cody VanDoren, Force Concept Inventory Validation Interviews

2012, Aaron Adamson, UNC Secondary Teaching Physics Emphasis

2011-2012, Kelseigh Schneider, Development and Review of Physical Science Curriculum

2012, Isabel Kirk, Force Concept Inventory Validation Interviews

**Teaching:**

**Courses Delivered:**

University of Northern Colorado, Greeley, Colorado

Science 103: Physical Science for the 21<sup>st</sup> Century

Science 106: Introduction to Space Flight

Science 265: Physical Science Concepts – Pre-Service Elementary Teachers

Science 265: Physical Science Concepts Laboratory

Science 465: Principles of Scientific Inquiry: Finding Order in Chaos – Pre-Service Elementary Teachers

Science Education 441/541: Methods of Teaching Secondary School Science

Science Education 622 – Teaching Methods

Science Education 622 – Evolution of Science Teaching Practices

Science Education 695 Action Research I

Science Education 696 Action Research II

Science Education 697 Action Research III

Physics 220: Introductory Physics I - algebra based

Physics 220: Introductory Physics I Laboratory

Physics 221: Introductory Physics II - algebra based

Physics 221: Introductory Physics II Laboratory

Physics 240: General Physics I Laboratory

Physics 241: General Physics II Laboratory

Help session Physics 240: General Physics I – calculus based

University of Colorado, Boulder, Colorado, Science Education Initiative  
Science Teaching Fellow Education Research Training

University of Colorado, Boulder, Colorado, Department of Physics

Physics 2020: Introductory Physics 1, Laboratory/Recitation

Physics 2021: Introductory Physics 2, Laboratory/Recitation

**Courses Developed:**

University of Northern Colorado

Science Education 622 – Teaching Methods  
Science Education 622 – Evolution of Science Teaching Practices  
Science Education 441 – Methods for teaching Secondary School Science  
Science 465 Principles of Scientific Inquiry: Finding Order in Chaos – Pre-Service Elementary Teachers  
Physics 220: Introductory Physics I - algebra based  
Physics 220: Introductory Physics I Laboratory  
Physics 221: Introductory Physics II - algebra based  
Physics 221: Introductory Physics II Laboratory  
Science 103: Physical Science for the 21<sup>st</sup> Century

University of Colorado, Boulder, Colorado, Science Education Initiative  
Science Teaching Fellow Education Research Training

**Professional Development:**

2014 APS Professional Skills Development Workshop for Women Physicists at the American Physical Society March 2014 meeting. (competitive)  
2014 Critical and Creative Thinking in the STEM Fields Webinar, Colorado Educator Preparation Project  
2013 Educator Effectiveness Presentation, Linda Barker hosted by College of Education and Behavior Sciences  
2013 STAFF FORUM: Dealing with Difficult People at Work  
2012 CETL Workshop on primary resources from the library of congress for teacher preparation  
2012 CETL Faculty Forum: Use and Interpretation of Effect Size in Quantitative Research

**Honors and Awards:**

2011 Tech Award Laureate, The Tech Museum. For PhET Interactive Simulations.  
2010 Longs Peak Council Boy Scouts of America Troop Leader of the Year  
Winner of the 2007 NSF and Science Magazine International Science and Technology Visualization Challenge in the interactive media category. For PhET Interactive Simulations.  
Appointed by Dean of Arts and Sciences to represent University of Colorado at the National Convocation on Science and Engineering Doctoral Education: Washington, D.C., 1996  
Lead Graduate Teacher, University of Colorado, Boulder, 1995-1996  
Honorary Member of the American Association of Physics Teachers, 1995-1996  
Outstanding Graduate Teacher, University of Colorado, Boulder. 1994-1995

Named to National Dean's List, 1994

*Suma Cum Laude*, University of Northern Colorado, 1994.

President of the Society of Physics Students, 1992-1994

Golden Key Honor Society

UNC Honors Program

Philip Ross Bachenburg Scholarship

Colorado Wyoming Academy of Science Outstanding Presentation

Greeley area Board of Realtors most Promising Business Student  
Scholarship

Future Business Leaders of America (FBLA) State Officer

Organized and Conducted District FBLA conference

Ms. Future Business Leader, 2<sup>nd</sup> Place State Competition 1987