

## CURRICULUM VITAE

**Amy D. Robertson**

Seattle Pacific University

Department of Physics

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### EDUCATION

- 2006 – 2011                      Ph.D., Physics, University of Washington  
Dissertation title: *An Investigation of University Student and K-12 Teacher Reasoning About Key Ideas in the Development of the Particulate Nature of Matter*  
Committee Chair: Peter Shaffer, Physics Education Group
- 2006 – 2008                      M.S., Physics, University of Washington
- 2002 – 2006                      B.S., Physics, minor in Mathematics, Baylor University
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### APPOINTMENTS

- 2014 – present                      Research Assistant Professor of Physics  
**Seattle Pacific University, Seattle, WA**
- 2011 – 2014                      Visiting Assistant Professor of Physics  
**Seattle Pacific University, Seattle, WA**
- 2008 – 2011                      National Science Foundation Graduate Research Fellow  
**University of Washington, Department of Physics, Seattle, WA**
- 2006 – 2008                      Teaching Assistant  
**University of Washington, Department of Physics, Seattle, WA**
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### RESEARCH EXPERIENCE

- 2016 – 2019                      PI, “*University Student Conceptual Resources for Understanding Physics*” (NSF DUE 1608510, \$154,911)  
**Seattle Pacific University, Seattle, WA**  
Identify university student resources for understanding forces and mechanical waves. Develop and test curricular materials that build on student resources.
- 2016 – 2018                      Co-PI, “*Identifying best practices for inclusive physics learning environments*” (NSF DUE 1611318, \$299,715)  
**Seattle Pacific University, Seattle, WA**  
Identify best-practices and seek to understand what resources faculty need for diversifying participation in physics departments. Produce resources for physics faculty that align with best practices and faculty needs.

- 2014 – 2018 *Co-PI, “Focus on Energy: Preparing Elementary Teachers to Meet the NGSS Challenge” (NSF DRL 1418211, \$821,000)*  
**Seattle Pacific University, Seattle, WA**  
 Develop approach to teaching energy in K-5 classrooms. Facilitate professional development about energy for K-5 teachers. Evaluate effectiveness of approach for enhancing conceptual understanding and representational competency among students and teachers.
- 2012 – 2016 *Co-PI, “Assessing, validating, and developing content knowledge for teaching energy” (NSF DRL 122777, \$999,977)*  
**Seattle Pacific University, Seattle, WA**  
 Develop and validate a set of written assessments and observational protocol to measure content knowledge for teaching energy in physics. Support and evaluate teachers in professional development.
- 2011-2013 *Assistant Director, Interdisciplinary Research Institute in STEM Education*  
**Seattle Pacific University, Seattle, WA**  
 Co-lead team of visiting scholar-videographers in documenting and producing a library of relevant episodes captured in professional development courses offered by the project listed above.
- 2011 – 2013 *Researcher, “Honing diagnostic practice: Toward a new model of teacher professional preparation and development” (NSF DRL 0822342, \$3,600,000)*  
**Seattle Pacific University, Seattle, WA**  
 Conduct qualitative video research to study the teaching and learning of energy in the context of inservice K-12 teacher classrooms and professional development workshops. Develop new ways of assessing K-12 teacher growth in pedagogical content knowledge, beliefs about the nature of science, and attention to the disciplinary substance of student ideas.
- 2008 – 2011 *National Science Foundation Graduate Research Fellow*  
**University of Washington, Seattle, WA**  
 Develop instruments to assess instructional effectiveness. Assess university student and K-12 teacher understanding of the particle nature of matter. Develop instructional materials for use in preparation and professional development of K-12 teachers.

## TEACHING EXPERIENCE

- Fall 2011-Spring 2016 **Coordinator and Instructor**, Undergraduate Learning Assistant Program  
 Associated course numbers: PHY 4511, PHY 4512, PHY 4513  
**Seattle Pacific University, Seattle, WA**  
 Coordinate nationally-recognized undergraduate Learning Assistant program, prepare learning assistants for weekly in-class experience and facilitate course on science teaching pedagogy.
- Winter 2015 **Instructor**, Independent Study: Theory and Research in Secondary Teacher Pedagogical Content Knowledge  
 Associated course number: EDU 7900  
**Seattle Pacific University, Seattle, WA**  
 Introduce doctoral students to literature on pedagogical content knowledge and apply theory to analysis of classroom video.

- Winter 2015 **Instructor**, Senior Project Laboratory  
Associated course number: PHY 4970  
**Seattle Pacific University, Seattle, WA**  
Supervise undergraduate research in physics education.
- Spring 2012 and Spring 2014 **Instructor**, Science Teaching Immersion Experience  
Associated course numbers: PHY 4515, EDU 6960  
**Seattle Pacific University, Seattle, WA**  
Support teaching candidates and prospective teachers in integrating best practices and theory from STEM education research into lesson planning, assessment, and implementation in local K-12 schools.
- Spring 2013 **Instructor**, Special Topics: Scientific Writing  
Associated course number: PHY 4950  
**Seattle Pacific University, Seattle, WA**  
Induct undergraduates into practices of scientific writing for education research journals. Collaboratively analyze, frame, and outline manuscript for publication.
- Summers, 2007 – 2010 **Instructor**, Summer Institute for Inservice K-12 Teachers of Physics and Physical Science  
Associated course numbers: PHYS 405, PHYS 406, PHYS 407, PHYS 408, PHYS 409  
**University of Washington, Seattle, WA**  
Instruct in intensive five-week summer course that trains inservice K-12 teachers to teach physics and physical science as a process of inquiry.  
*Modules taught/led:* properties of matter, observational astronomy, electric circuits, heat and temperature, light and optics
- 2007 – 2008 **Head Graduate Teaching Assistant**, Tutorials in Introductory Physics  
Associated course numbers: PHYS 121, PHYS 122, PHYS 123  
**University of Washington, Seattle, WA**  
Oversee day-to-day operation of introductory physics tutorials sequence. Develop exam questions for introductory physics course exams. Lead preparation sessions for teaching assistants. Teach and grade introductory physics tutorials.
- 2006 – 2007 **Graduate Teaching Assistant**, Introductory Physics  
Associated course numbers: PHYS 121, PHYS 122, PHYS 123  
**University of Washington, Seattle, WA**  
Teach and grade introductory physics labs and tutorials. Lead recitation sections for Science and Society course.

## PROFESSIONAL ACTIVITY

### JOURNAL ARTICLES:

- A. D. Robertson** and P. S. Shaffer, “University Student and K-12 Teacher Reasoning About the Basic Tenets of Kinetic-Molecular Theory: Part I – Volume,” *American Journal of Physics* **81** (4), 303-312 (2013).

- R. E. Scherr, H. G. Close, E. W. Close, V. J. Flood, S. B. McKagan, **A. D. Robertson**, L. Seeley, M. C. Wittmann, and S. Vokos, “Negotiating energy dynamics through embodied action in a materially structured environment,” *Physical Review Special Topics – Physics Education Research* **9** (2), 020101-020118 (2013).
- A. D. Robertson** and P. S. Shaffer, “‘Combustion always produces carbon dioxide and water’: A Discussion of University Chemistry Student Use of Rules in Place of Principles,” *Chemistry Education Research and Practice* **15**(4), 763-776 (2014).
- R. E. Scherr and **A. D. Robertson**, “The productivity of ‘collisions generate heat’ for reconciling an energy model with mechanistic reasoning: A case study,” *Physical Review Special Topics – Physics Education Research* **11** (1), 010111-1 – 010111-16 (2015).
- R. E. Scherr, B. W. Harrer, H. G. Close, A. R. Daane, L. S. DeWater, A. D. Robertson, L. Seeley, and S. Vokos, “Energy Tracking Diagrams,” *The Physics Teacher* **54**, 96-102 (2016).
- H. C. Sabo\*, L. M. Goodhew, and **A. D. Robertson**, “University Student Conceptual Resources for Understanding Energy,” *Physical Review Physics Education Research* **12**(1), 010126-1 – 010126-28 (2016).
- A. D. Robertson** and P. S. Shaffer, “University Student and K-12 Teacher Reasoning About the Basic Tenets of Kinetic-Molecular Theory: Part II – Pressure,” *American Journal of Physics* **84**(10), 795-809.
- A. D. Robertson**, R. E. Scherr, L. M. Goodhew, A. R. Daane, K. E. Gray, and L. B. Aker, “Identifying Content Knowledge for Teaching Energy: Examples from High School Physics,” *Physical Review Physics Education Research* **13**(1), 010105-1-010105-14.
- L. M. Goodhew and **A. D. Robertson**, “Exploring the Role of Content Knowledge in Responsive Teaching,” *Physical Review Physics Education Research* **13**(1), 010106-1-010106-24.
- A. D. Robertson** and L. J. Atkins Elliot, “‘All students are brilliant’: A confession of injustice and a call to action,” *The Physics Teacher* (in press).
- R. E. Scherr and **A. D. Robertson**, “Unveiling privilege to broaden participation,” *The Physics Teacher* (in press).
- J. Radoff, **A. D. Robertson**, S. Fargason, and F. Goldberg, “Responsive teaching in the age of high-stakes testing: Does pursuing students’ ideas mean they will perform poorly?,” *Science & Children* (in press).
- A. D. Robertson**, R. E. Scherr, and S. B. McKagan, “Paradigms in Physics Education Research,” under revision for *International Journal of Research and Method in Education* (2016).
- A. R. Daane, J. Heglund, **A. D. Robertson**, H. G. Close, and R. E. Scherr, “The pedagogical value of conceptual metaphor for secondary science teachers,” under revision for *Science Education* (2016).
- A. R. Daane and **A. D. Robertson**, “‘If energy is always conserved, then why do we care about saving it?’ – K-12 students’ ideas about energy conservation and use,” under revision for *The Science Teacher* (2017).
- A. D. Robertson**, “Supporting the Development of Curricular Knowledge Among Novice Physics Teachers,” under revision for *Innovations in Science Teacher Education* (2016).
- A. D. Robertson**, K. E. Gray, C. E. Lovegren\*, K. L. Rininger\*, and S. T. Wenzinger\*, “Curricular Knowledge as an Entry Point for Responsive Instruction,” under review for *Cognition and Instruction* (2016).
- A. D. Robertson** and A. R. Daane, “Energy Project Professional Development: Promoting Positive

Attitudes About Science Among K-12 Teachers,” under revision for *Physical Review Physics Education Research* (2016).

- A. D. Robertson** and J. Richards, “Investigating a Responsive Approach to Supporting Pre-Service Science Teachers in Enacting Responsive Teaching,” under review for *Science Education* (2017).
- R. Russ, A. Elby, **A. D. Robertson**, J. Richards, M. J. Luna, and J. Walkoe, “Exploring diversity in researchers’ conceptualizations of responsive teaching,” under review for *Teachers College Record* (2017).
- J. Richards, A. Elby, M. J. Luna, **A. D. Robertson**, D. M. Levin, and C. Nyeggen, “Reframing the noticing problem: What prevents novice teachers from attending to the substance of student thinking?,” in preparation for the *Journal of the Learning Sciences* (2017).
- A. D. Robertson**, K. E. Gray, O. Wentink, and S. Vokos, “Energy Theater: Precipitating K-12 teachers’ three-dimensional learning,” in preparation for *Physical Review Physics Education Research* (2017).

#### NEWSLETTER ARTICLES:

- A. D. Robertson**, E. P. Eppard\*, L. M. Goodhew\*, E. L. Maaske\*, H. C. Sabo\*, F. C. Stewart\*, D. L. Tuell\*, and S. T. Wenzinger\*, “Being a Seattle Pacific University Learning Assistant: A transformative experience of listening and being heard,” *American Physical Society Forum on Education Newsletter*, Summer 2014 (2014).

#### BOOK CHAPTERS:

- A. D. Robertson**, L. Atkins, D. Levin, and J. Richards, “What is Responsive Teaching,” in *Responsive Teaching in Science and Mathematics*, edited by A. D. Robertson, R. E. Scherr, and D. Hammer, Routledge: New York, NY, pp. 1-35 (2016).
- J. Richards and **A. D. Robertson**, “A Review of the Research on Responsive Teaching in Science and Mathematics,” in *Responsive Teaching in Science and Mathematics* edited by A. D. Robertson, R. E. Scherr, and D. Hammer, Routledge: New York, NY, pp. 36-55 (2016).
- A. D. Robertson**, J. Richards, A. Elby, and J. Walkoe, “Documenting Variability Within Teacher Attention and Responsiveness to Student Thinking,” in *Responsive Teaching in Science and Mathematics*, edited by A. D. Robertson, R. E. Scherr, and D. Hammer, Routledge: New York, NY, pp. 227-247 (2016).
- M. S. Sabella, **A. D. Robertson**, and A. G. Van Duzor, “The Teacher Immersion Course Model: A Reform-Oriented Early Teaching Experience that Capitalizes on the Expertise of Multiple Communities,” in *Recruiting and Educating Future Physics Teachers: Case Studies and Effective Practices*, edited by E. Brewe and C. Sandifer, AIP: Melville, NY, pp. 117-128 (2015).
- E. W. Close, L. Seeley, **A. D. Robertson**, L. S. DeWater, and H. G. Close, “Seattle Pacific University: Nurturing Physics Teachers at a Small Liberal-Arts School,” in *Recruiting and Educating Future Physics Teachers: Case Studies and Effective Practices*, edited by E. Brewe and C. Sandifer, AIP: Melville, NY, pp. 37-52 (2015).

#### CONFERENCE PROCEEDINGS:

- C. E. Lovegren\* and **A. D. Robertson**, “Development of Novice Teachers’ Views of Student Ideas As Sensible and Productive,” in *2013 Physics Education Research Conference Proceedings*, edited by P. V. Englehardt, A. D. Churukian, and D. L. Jones (AIP, Portland, OR, 2013), pp. 225-228.

- R. E. Scherr, **A. D. Robertson**, L. Seeley, and S. Vokos, "Content knowledge for teaching energy: An example from middle-school physical science", in *2013 Physics Education Research Conference Proceedings*, edited by P. V. Englehardt, A. D. Churukian, and D. L. Jones (AIP, Portland, OR, 2013), pp. 321-324. **\*\*Won 2013 PERC Proceedings Paper Award**
- A. Elby, J. Richards, R. Russ, M. Luna, J. Walkoe, J. Coffey, **A. D. Robertson**, A. Edwards, A. Gupta, M. Sherin, and E. van Es, "Differing notions of responsive teaching across mathematics and science: Does the discipline matter?," in the *Proceedings of the 2014 International Conference of the Learning Sciences*, edited by J. L. Polman, E. A. Kyza, D. K. O'Neill, I. Tabak, W. R. Penuel, A. S. Jurow, K. O'Connor, T. Lee, and L. D'Amico (ICLS, Boulder, CO, 2014), pp. 1406-1415.
- L. M. Goodhew\* and **A. D. Robertson**, "Investigating the Relationship Between the Substance Metaphor for Energy and Its Proposed Affordances and Limitations," in *2014 Physics Education Research Conference Proceedings*, edited by P. V. Englehardt, A. D. Churukian, and D. L. Jones (AIP, Minneapolis, MN, 2014), pp. 103-106.
- A. D. Robertson**, "Valuing student ideas morally, instrumentally, and intellectually," in *2015 Physics Education Research Conference Proceedings*, edited by A. D. Churukian, D. L. Jones, and L. Ding (AIP, College Park, MD, 2016), pp. 275-278.
- A. D. Robertson** and L. M. Goodhew, "Exploring the role of content knowledge in responsive teaching," in *2016 Physics Education Research Conference Proceedings*, edited by D. L. Jones, L. Ding, and A. Traxler (AIP, Sacramento, CA, 2016), pp. 272-275.

#### EDITED BOOKS:

- A. D. Robertson**, R. E. Scherr, and D. Hammer, "Responsive Teaching in Science and Mathematics," Routledge: New York, NY (2016).

#### INVITED PRESENTATIONS:

- A. D. Robertson, S. B. McKagan, and R. E. Scherr, "Making Sense of Different Generalization and Selection Practices in PER," *2016 Physics Education Research Conference, Sacramento, CA, July 2016*
- R. Russ, A. Elby, J. Richards, A. D. Robertson, J. Walkoe, and M. J. Luna, "Exploring Diversity in Researchers' Conceptualizations of Responsive Teaching," *American Educational Research Conference, Washington, DC, April 2016*
- A. D. Robertson and J. Richards, "Conceptions of and Research on Responsive Teaching," *American Educational Research Conference, Washington, DC, April 2016*
- A. D. Robertson and R. E. Scherr, "Responsive Teaching in Science and Mathematics," *SPU Creative Conversations, Seattle, WA, February 2016*
- A. D. Robertson and R. E. Scherr, "Productivity of 'collisions generate heat' for reconciling an energy model with mechanistic reasoning," *Kansas State University Physics Education Research Seminar, Manhattan, KS, November 2015*
- A. D. Robertson, S. B. McKagan, and R. E. Scherr, "Making Sense of Different Generalization and Selection Practices in PER," *Summer Meeting of the American Association of Physics Teachers, College Park, MD, July 2015*
- E. W. Close, L. Seeley, A. D. Robertson, L. S. DeWater, and H. G. Close, "Recruiting and Preparing Teachers Through Inclusive, Collaborative Physics Education Community," *Summer Meeting of the American Association of Physics Teachers, College Park, MD, July 2015*

- A. D. Robertson and R. E. Scherr, "Productivity of 'collisions generate heat' for reconciling an energy model with mechanistic reasoning," *Tufts University Data Sharing Session, Boston, MA, March 2015*
- A. D. Robertson and L. Seeley, "Adapting the Colorado LA Pedagogy Course for Your Institution," *Annual Meeting of the Physics Teacher Education Coalition, February 2015*
- A. D. Robertson and K. E. Gray, "Content Knowledge for Teaching – What Does it Look Like, and How Do We Measure It?: An Example From Physics," *SPU Creative Conversations, Seattle, WA, February 2015*
- R. Russ, A. Elby, J. Richards, A. D. Robertson, J. Walkoe, and M. Luna, "A Discussion of Differences: Exploring Conceptualizations of Responsive Teaching," *International Conference of the Learning Sciences, Boulder, CO, July 2014*
- A. D. Robertson, R. E. Scherr, and S. B. McKagan, "Paradigms in Physics Education Research," *2013 Physics Education Research Conference, Portland, OR, July 2013*
- A. D. Robertson, "Engaging the Implicit Structure and Decisions of the Curriculum: A Missing Element in the Development of Learning Assistants' Proximal Formative Assessment Skills," *Winter Meeting of the American Association of Physics Teachers, New Orleans, LA, January 2013*
- A. D. Robertson, "Engaging the Implicit Structure and Decisions of the Curriculum: A Missing Element in the Development of Learning Assistants' Proximal Formative Assessment Skills," *University of Maryland Physics Education Research Group Seminar, College Park, MD, December 2012*
- A. D. Robertson, "Toward Clarifying Paradigms in Physics Education Research," *plenary, Foundations and Frontiers of Physics Education Research – Puget Sound, Sedro-Wooley, WA, June 2012*

#### CONFERENCE PRESENTATIONS:

- A. D. Robertson, Clarissa E. Lovegren\*, Kathryn L. Rininger\*, Scott T. Wenzinger\*, and K. E. Gray, "Curricular Knowledge as an Entry Point for Responsive Instruction," *Summer Meeting on the American Association of Physics Teachers, Sacramento, CA, July 2016*
- A. D. Robertson, R. E. Scherr, L. M. Goodhew\*, A. R. Daane, K. E. Gray, and L. B. Aker, "Toward a Practice-Based Theory of Content Knowledge for Teaching Energy in High School Physics," *Summer Meeting of the American Association of Physics Teachers, College Park, MD, July 2015*
- H. C. Sabo\*, L. M. Goodhew\*, and A. D. Robertson, "University Student Conceptual Resources for Understanding Energy," *Summer Meeting of the American Association of Physics Teachers, College Park, MD, July 2015*
- A. R. Daane, J. Haglund, A. D. Robertson, R. E. Scherr, and H. Close, "The Pedagogical Value of Conceptual Metaphor for Secondary Science Teachers," *Summer Meeting of the American Association of Physics Teachers, College Park, MD, July 2015*
- A. D. Robertson and R. E. Scherr, "Assessing Energy Project Learning Goals Using Energy Tracking Diagrams," *Winter Meeting of the American Association of Physics Teachers, Orlando, FL, January 2014*
- R. E. Scherr, A. D. Robertson, L. Seeley, and S. Vokos, "Content Knowledge for Teaching Energy: An Example from Middle School Physical Science," *Summer Meeting of the American Association of Physics Teachers, Portland, OR, July 2013*
- A. M. Barr and A. D. Robertson, "When Does a Group Ignore their Own Question?," *Winter Meeting of the American Association of Physics Teachers, New Orleans, LA, January 2013*

- A. D. Robertson, R. E. Scherr, S. B. McKagan, and S. Vokos, "Toward Assessing K-12 Teacher Responsiveness to the Disciplinary Substance of Student Ideas," *Summer Meeting of the American Association of Physics Teachers, Philadelphia, PA, July 2012*
- S. B. McKagan, A. R. Daane, A. D. Robertson, and R. E. Scherr, "How Energy Theater Supports Participants in Accounting for Energy," *Summer Meeting of the American Association of Physics Teachers, Philadelphia, PA, July 2012*
- A. D. Robertson, S. B. McKagan, R. E. Scherr, and S. Vokos, "Assessing a Wide Range of Instructional Goals for K-12 Teacher Professional Development," *Winter Meeting of the American Association of Physics Teachers, Ontario, CA, February 2012*
- A. R. Daane, L. Seeley, A. D. Robertson, S. Vokos, and R. E. Scherr, "Learners' understanding of energy: Conservation of amount, decrease of value," *Winter Meeting of the American Association of Physics Teachers, Ontario, CA, February 2012*

### CONFERENCE POSTERS:

- L. M. Goodhew, A. D. Robertson, R. E. Scherr, and P. R. L. Heron, "University Student Conceptual Resources for Understanding Waves," *Winter Meeting of the American Association of Physics Teachers, Atlanta, GA, January 2017*
- A. D. Robertson and L. M. Goodhew, "Exploring the Role of Content Knowledge in Responsive Teaching," *2016 Physics Education Research Conference, Sacramento, CA, July 2016*
- H. C. Sabo\*, L. M. Goodhew, and A. D. Robertson, "University Student Conceptual Resources for Understanding Energy," *Foundations and Frontiers in Physics Education Research – Puget Sound, Diablo, WA, June 2016*
- A. R. Daane, A. D. Robertson, and L. S. DeWater, "If Energy Is Always Conserved, Then Why Do We Care About Saving It?," *Summer Meeting of the American Association of Physics Teachers, College Park, MD, July 2015*
- A. R. Daane, J. Haglund, A. D. Robertson, R. E. Scherr, and H. Close, "The Pedagogical Value of Conceptual Metaphor for Secondary Science Teachers," *Summer Meeting of the American Association of Physics Teachers, College Park, MD, July 2015*
- A. D. Robertson and J. Richards, "Novice Teacher Sense-Making About Responsive Teaching: Important Points in the Development of Language and Practice," *Annual Meeting of the Physics Teacher Education Coalition, Seattle, WA, February 2015; Foundations and Frontiers in Physics Education Research, Bar Harbor, ME, June 2015; Summer Meeting of the American Association of Physics Teachers, College Park, MD, July 2015; Foundations and Frontiers in Physics Education Research – Puget Sound, Diablo, WA, June 2016*
- L. M. Goodhew\* and A. D. Robertson, "Investigating the Proposed Affordances and Limitations of the Substance Metaphor for Energy," *2014 Physics Education Research Conference, Minneapolis, MN, July 2014*
- A. D. Robertson, R. E. Scherr, L. Seeley, and S. Vokos, "Content Knowledge for Teaching Energy: An Example from Middle School Physical Science," *Northwest Section American Physical Society Meeting, Seattle, WA, 2014*
- A. D. Robertson, "Valuing Student Ideas Morally, Instrumentally, and Intellectually," *2013 Physics Education Research Conference, Portland, OR, July 2013 and 2015 Physics Education Research Conference, College Park, MD, July 2015*
- C. E. Lovegren\* and A. D. Robertson, "Development of Novice Teachers' Views of Student Ideas As Sensible and Productive," *2013 Physics Education Research Conference, Portland, OR, July 2013*



- J. Richards, A. D. Robertson, A. Elby, and J. Walkoe, "Documenting Variability *Within* Teacher Attention and Responsiveness to the Disciplinary Substance of Student Thinking," *Science Teacher Responsiveness Conference, Seattle, WA, July 2013*
- C. Lovegren\*, K. L. Rininger\*, S. T. Wenzinger\*, A. D. Robertson, and K. E. Gray, "Process, Product, and Effect on Learning Assistants' Teaching Practice via Identification of the Implicit Decisions of Physics Tutorials Curriculum," *Seattle Pacific University Erickson Undergraduate Research Conference, Seattle, WA, May 2013. \*\*Won Best Poster Award*
- A. D. Robertson, K. E. Gray, C. E. Lovegren\*, K. R. Rininger\*, and S. T. Wenzinger\*, "Engaging the Implicit Decisions of the Curriculum: A Missing Element in LA Development," *Foundations and Frontiers of Physics Education Research, Bar Harbor, ME, June 2013* and *Annual Meeting of the Physics Teacher Education Coalition, Baltimore, MD, March 2013*
- A. D. Robertson, K. E. Gray, L. S. DeWater, H. Close, and S. Vokos, "The Physics Learning Assistant Program at Seattle Pacific University," *Colorado Learning Assistant Workshop, Boulder, CO, October 2012*
- A. D. Robertson, R. E. Scherr, S. B. McKagan, and S. Vokos, "Toward Assessing K-12 Teacher Responsiveness to the Disciplinary Substance of Student Ideas," *Summer Meeting of the American Association of Physics Teachers, Philadelphia, PA, July 2012* and *Annual Meeting of the Washington Section of the American Association of Physics Teachers, Bellingham, WA, October 2012*
- S. B. McKagan and A. D. Robertson, "Defining 'Research Validation' for PER Users and Researchers," *Summer Meeting of the American Association of Physics Teachers, Philadelphia, PA, July 2012*
- S. B. McKagan, A. R. Daane, A. D. Robertson, and R. E. Scherr, "How Energy Theater Supports Participants in Accounting for Energy," *Summer Meeting of the American Association of Physics Teachers, Philadelphia, PA, July 2012*
- A. D. Robertson, S. B. McKagan, R. E. Scherr, and S. Vokos, "Assessing a Wide Range of Instructional Goals for K-12 Teacher Professional Development," *Winter Meeting of the American Association of Physics Teachers, Ontario, CA, February 2012* and *Foundations and Frontiers in Physics Education Research – Puget Sound, Sedro-Wooley, WA, June 2012*
- A. R. Daane, L. Seeley, A. D. Robertson, S. Vokos, and R. E. Scherr, "Learners' understanding of energy: Conservation of amount, decrease of value," *Winter Meeting of the American Association of Physics Teachers, Ontario, CA, February 2012*

\*Indicates student co-author

#### **THESES SUPERVISED:**

- A. Chambers, "Assessing the Effectiveness of Energy Project Professional Development," Undergraduate Honors Thesis (2012).
- L. Goodhew, "Investigating the Relationship Between the Substance Metaphor for Energy and Its Proposed Affordances and Limitations," Undergraduate Honors Thesis (2014).
- H. Sabo, "University Student Conceptual Resources for Understanding Energy," Physics Senior Project (2015).

#### **WORKSHOPS GIVEN:**

Physics Teaching for Social Justice, *2016 Physics Education Research Conference, Sacramento, CA, July 2016*

SPU Learning Assistant Pedagogy Course, *Regional Learning Assistant Workshop, February 2015*

Adapting the Colorado Learning Assistant Model to Your Institution, *Annual Meeting of the Physics Teacher Education Coalition, March 2013*

Immersing Science Students in the Teaching Process: The Importance of Multiple Communities, *Annual Meeting of the Physics Teacher Education Coalition, March 2013*

High School Math Day Workshop, *University of Washington, March 2009, March 2010, & March 2011*

Women in Science and Engineering Conference, *University of Washington, February 2009 & February 2010*

Knowles Science Teaching Foundation Fall Meeting Workshop, *University of Washington, October 2008*

University of Washington Engineering Summer Bridge Program Workshop, *University of Washington, August 2008*

### MEMBERSHIPS IN PROFESSIONAL SOCIETIES:

*American Association of Physics Teachers*  
*American Physical Society*  
*Physics Education Research Topical Group*  
*Phi Beta Kappa*  
*Sigma Pi Sigma*

### UNIVERSITY SERVICE

- 2015 *Advisor, Physics Senior Project*  
 Advise senior research project that satisfies the requirements of Physics Department.
- 2012-2014 *Member, Faculty Development Committee*  
 Support Center for Scholarship and Faculty Development. Review Faculty Research Grant applications, recruit and select Teaching Idea of the Year award recipients, and update faculty teaching evaluation forms and procedures.
- 2012 *Co-Organizer and Co-Facilitator, Day of Common Learning Session, "Fostering Productive Dialogue in Science Classrooms"*  
 Use classroom video to facilitate conversations around opportunities for hospitality, mutual understanding, and human flourishing in student-instructor dialogue.
- 2012 *Co-Organizer and Co-Facilitator, Faculty Retreat Breakout Session, "Fostering an Interactive Classroom through use of Learning Assistants"*  
 Organize and facilitate faculty introduction to use of Learning Assistants in interactive classrooms.
- 2012-2013 *Consultant, University Scale-Up of SPU Physics LA Program*  
 Consult with Center for Scholarship and Faculty Development to implement university-wide Learning Assistant Program.
- 2012 & 2014 *First reader, Undergraduate Honors Theses*  
 Supervise undergraduate research projects. Mentor students as they collect, analyze, and synthesize results of physics education research. Provide feedback on drafts of Honors Theses.
- 2011 & 2012 *Guest Presenter, Natural Sciences Capstone Seminar*

Foster dialogue about physics education research projects with students in senior capstone course.

## SELECTED PROFESSIONAL LEADERSHIP EXPERIENCE

- 2016 *Organizer, Invited Session, Summer Meeting of the American Association of Physics Teachers*  
 “Physics Teaching for Social Justice,” **Sacramento, CA**  
 Recruit speakers to share research and perspectives on physics teaching for social justice. Preside over session and ensuing discussion.
- 2014 *Organizer, Invited Session, Winter Meeting of the American Association of Physics Teachers*  
 “Responsive Teaching in Science,” **Orlando, FL**  
 Recruit nationally-recognized researchers and practitioners of responsive teaching. Preside over session.
- 2013 *Organizer, Invited Session, Winter Meeting of the American Association of Physics Teachers*  
 “Research Paradigms in PER,” **New Orleans, LA**  
 Recruit nationally-recognized leaders in physics education research to share their orientations toward research. Preside over session.
- 2012 – 2013 *Conference Organizer, Science Teaching Responsiveness Conference*  
**Seattle Pacific University, Seattle, WA**  
 Organize national by-invitation-only conference for faculty and graduate students who have expertise in responsive teaching. Recruit nationally-renowned plenary speakers. Co-edit book with chapters contributed by conference participants.
- 2012 – 2013, 2015 *Presider, Meetings of the American Association of Physics Teachers*  
**Various locations**  
 Preside over sessions of contributed talks. Introduce speakers and ensure that talks are began and ended at scheduled times.
- 2011 – 2012, 2015 – 2016 *Conference Organizer, Foundations and Frontiers in Physics Education Research: Puget Sound Conference*  
**North Cascades Institute, Sedro-Wooley, WA**  
 Organize regional conference for faculty, graduate student, and undergraduate members of the Physics Education Research community.
- 2011 *Facilitator, Working Group – Professional Collaborations: Vision for a Northwest Professional Exchange Program, Foundations and Frontiers in Physics Education Research: Puget Sound Conference*  
**Olympic Park Institute, Port Angeles, WA**  
 Organize and lead working group in which the goal was the establishment of a professional exchange program in the Pacific Northwest.
- 2009 – 2011 *Graduate student representative, Physics Department Graduate Committee*  
**University of Washington, Seattle, WA**  
 Represent graduate student body on committee charged with evaluating the graduate curriculum and advising process.
- 2008 – 2011 *Member, Physics Department Mentoring Committee*  
**University of Washington, Seattle, WA**  
 Spearhead mentoring program for graduate students in Physics Department. Present proposal for proactive mentoring program to faculty members in Physics Department. Organize mentoring forums for faculty members and graduate

students. Develop a series of worksheets about mentoring for faculty members and graduate students. Mentor fellow graduate students in role as peer mentors.

2007 – 2011

*Founder and leader, Physics Department Informal Community Service Organization*

**University of Washington, Seattle, WA**

Found an informal community service organization within Physics Department. Organize and advertise monthly service opportunities for graduate students and faculty. Lead students and faculty in monthly opportunities.

## ACADEMIC AWARDS AND HONORS

- 2016 *Physics Education Research Topical Group Travel Grant* (\$500) for travel and expenses for Moses Rifkin, a local high school teacher and invited speaker in session at Summer 2016 American Association of Physics Teachers meeting.
- 2014 *Physics Education Research Topical Group Travel Grant* (\$500) for travel and expenses for Sharon Fargason, an elementary school teacher and invited speaker in session at Winter 2014 American Association of Physics Teachers meeting.
- 2013 *Seattle Pacific University Faculty Research Grant Recipient* (\$1,800), to prepare manuscript that describes the development of curricular knowledge among novice teachers in SPU's Physics Learning Assistant Program.
- 2012 *Physics Education Research Topical Group Scholar-in-Residence Grant* (\$2,450) for travel and expenses for an extended visit to the University of Maryland in order to collaborate with researchers in the School of Education to refine existing work on assessing responsive teaching *in situ*.
- 2012 *Physics Education Research Topical Group Mini-Grant Recipient* (\$2,344), to pay for travel for nationally-renowned speakers to give plenary sessions at 2013 Science Teaching Responsiveness Conference.
- 2011 *Physics Education Research Topical Group Mini-Grant Recipient* (\$1,200), to pay registration fees for Foundations and Frontiers in Physics Education Research – Puget Sound conference organizers.
- 2010 *Transforming Research in Undergraduate STEM Education (TRUSE) Travel Award* (\$1,500) for travel, housing, and board to interdisciplinary science education research conference.
- 2010 *University of Washington Department of Physics Miller Award* (\$750) given to a senior or graduate student on the basis of need, excellence of character, and scholarship.
- 2009 & 2011 *University of Washington Graduate School Fund for Excellence and Innovation Student Travel Award* (\$200) for graduate student travel to an academic conference.
- 2007 *National Science Foundation Graduate Research Fellowship* (\$121,500) awarded to a select group of graduate students in the sciences nationwide. Fellows are chosen on the basis of research and leadership potential, demonstrated by a series of essays, letters of recommendation, and undergraduate and graduate achievements. The fellowship provides three years of full-time research support.
- 2006 *Mellam Family Foundation Fellowship* (\$5,000) given to promising physics graduate students with an interest in improving precollege and university education in physics.