

BETH A. LINDSEY, Ph. D.

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EDUCATION

UNIVERSITY OF WASHINGTON, Seattle, WA

Ph.D. in Physics March 2008

Dissertation: An Investigation into Student Understanding of Work and Energy in Introductory Mechanics

Advisors: Prof. Paula R. L. Heron, Prof. Lillian C. McDermott

M.S. in Physics June 2004

BRYN MAWR COLLEGE, Bryn Mawr, PA

A.B. in Physics, *magna cum laude* May 2000

Senior Thesis: The Photodissociation Dynamics of Rydberg States of Acetylene

Advisor: Prof. Elizabeth McCormack

PROFESSIONAL APPOINTMENTS AND TEACHING

PENN STATE GREATER ALLEGHENY, McKeesport, PA

Associate Professor, Physics 2016-Present

Assistant Professor, Physics 2010 – 2016

Courses taught:

Phys 211: Mechanics Phys 214: Waves, Optics, and Quantum Physics

Phys 212: Electricity & Magnetism Phys 296: Peer Tutoring in Physics

Phys 213: Fluids and Thermal Physics Psych 496: Independent Study in PER

SC 220: Principles and Strategies for Effective STEM Learning

SC 240: The LA Experience

Student Honors Projects overseen:

Austin Livsey, "The Physics of Electrostatic Discharge on Spacecraft." (Fall 2021).

Michael Moranelli, "The Physics of Lightning." (Spring 2020).

Tyler Patterson, "The Physics of MRIs." (Spring 2019).

William Mellinger, "Understanding How Students Learn Physics." (Fall 2018).

Christopher Pena Grana, "Magnetic Fields of Neutron Stars." (Fall 2018).

Cody Dishong, "Applying Physics to Robots." (Fall 2016).

Ashley Brandon, "Conflict of the Currents." (Spring 2016).

Matthew Shaw, "Examining Student Metacognition in Introductory Physics Courses." (Fall 2013).

Harrison Stoebe, "Examining Student Attitudes in Introductory Physics Courses." (Fall 2013).

Extension:

The Pennsylvania Mathematics Initiative: A professional development program for teachers to deepen their mathematical understanding to aid mathematics instruction (co-facilitator) 2016 - 2017

GEORGETOWN UNIVERSITY, Washington, DC

Visiting Assistant Professor, Physics 2008 – 2010

Courses taught:

Phys 012: Hands-On Physics

Tutorials for:

Phys 105: Mechanics Phys 211: Relativity and Quantum mechanics

Phys 108: Waves and Thermal Physics Phys 214: Electricity and Magnetism

UNIVERSITY OF WASHINGTON, Seattle, WA
Graduate student, Physics Education Research

2002 – 2007

Courses taught:

Tutorials for:

Phys 121: Mechanics

Phys 123: Waves and Optics

Phys 122: Electricity and Magnetism

Extension:

NSF Summer Institute in Physics and Physical Science for In-Service Teachers

NSF Academic Year Continuation Course in Physics and Physical Science for In-Service Teachers

MISS PORTER'S SCHOOL, Farmington, CT

Physics Teacher

2000 – 2002

Courses taught:

Physics, AP Physics B, Honors Conceptual Physics 9, Summer Challenge for Middle-School Girls

PUBLICATIONS

Peer-reviewed Journal Articles

M. L. Nagel and **B. A. Lindsey**. Implementation of reasoning chain construction tasks to support student explanations in general chemistry. *J. Chem. Educ.* Published online on 3 December, 2021.

DOI: 10.1021/acs.jchemed.1c00729

J. C. Speirs, M. R. Stetzer, **B. A. Lindsey**, and M. Kryjevskaja, Exploring and supporting student reasoning in physics by leveraging dual-process theories of reasoning and decision making, *Phys. Rev. Phys. Educ. Res.* **17**, 020137 (2021). DOI: 10.1103/PhysRevPhysEducRes.17.020137.

M. Kryjevskaja, M. R. Stetzer, **B. A. Lindsey**, A. McNerny, P. R. L. Heron, and A. Boudreaux, Designing research-based instructional materials that leverage dual-process theories of reasoning: Insights from testing one specific, theory-driven intervention, *Phys. Rev. Phys. Educ. Res.* **16**, 020140 (2020). DOI: <https://doi.org/10.1103/PhysRevPhysEducRes.16.020140>.

B. A. Lindsey, M. L. Nagel, and B. N. Savani, Leveraging understanding of energy from physics to overcome unproductive intuitions in chemistry, *Phys. Rev. Phys. Educ. Res.* **15**, 10120 (2019). DOI: <http://dx.doi.org/10.1103/PhysRevPhysEducRes.15.010120>.

M. L. Nagel and **B. A. Lindsey**, The Use of Classroom Clickers to Support Improved Self-Assessment in Introductory Chemistry, *J. Coll. Sci. Teach.* **47**, 72 (2018). DOI: http://dx.doi.org/10.2505/4/jcst18_047_05_72

Hull, M. M., **Lindsey, B. A.**, Archambault, M., Davey, K., & Liu, A. Y. “Unexpected attitudinal growth in a course combining reformed curricula.” *Physical Review Physics Education Research*, **12** (January 2016): 010101.
<http://journals.aps.org/prper/abstract/10.1103/PhysRevPhysEducRes.12.010101>

Lindsey, B. A., and M. L. Nagel. “Do students know what they know?” *Physical Review Special Topics - Physics Education Research*, **11** (July 2015): 020103.
<http://journals.aps.org/prstper/abstract/10.1103/PhysRevSTPER.11.020103>

[This paper was marked as an “Editor’s Suggestion” indicating that editors and referees found it to be “of particular interest, importance, or clarity”]

Nagel, M. L. and **B. A. Lindsey**. “Student use of energy concepts from physics in chemistry courses.” *Chemistry Education Research and Practice* **16** (January 2015): 67-81.
<http://pubs.rsc.org/en/content/articlelanding/2014/rp/c4rp00184b>.

Lindsey, B. A. “Student reasoning about electrostatic and gravitational potential energy: An exploratory study with interdisciplinary consequences.” *Physical Review Special Topics - Physics Education Research*, **10** (January 2014): 013101.
<http://journals.aps.org/prstper/abstract/10.1103/PhysRevSTPER.10.013101>.

Lindsey, B. A. and A. Y. Liu. “Combining two reform curricula: An example from a course with well-prepared students.” *American Journal of Physics: Physics Education Research Section* **81** (July 2013): 545-553. http://ajp.aapt.org/resource/1/ajpias/v81/i7/p545_s1.

Lindsey, B. A., P. R. L. Heron, and P. S. Shaffer. “Student understanding of energy: Difficulties related to systems.” *American Journal of Physics* **80** (February 2012): 154-163.
http://ajp.aapt.org/resource/1/ajpias/v80/i2/p154_s1.

Lindsey, B. A., L. Hsu, H. Sadaghiani, J. W. Taylor, and K. Cummings. “Positive attitudinal shifts with the Physics by Inquiry curriculum across multiple implementations.” *Physical Review Special Topics: Physics Education Research* **8** (January 2012): 010102.
<http://prst-per.aps.org/abstract/PRSTPER/v8/i1/e010102>.

Lindsey, B. A., P. R. L. Heron, and P. S. Shaffer. “Student ability to apply the concepts of work and energy to extended systems.” *American Journal of Physics* **77** (November 2009): 999-1009.
http://ajp.aapt.org/resource/1/ajpias/v77/i11/p999_s1.

Peer-reviewed Conference Proceedings

Mays, M., Stetzer, M. R., and **Lindsey, B. A.** Supporting student construction of alternative lines of reasoning, in *2021 Physics Education Research Conference Proceedings*, edited by M. B. Bennett, B. Frank, and R. Vieyra (2021), pp. 277–282 DOI: 10.1119/perc.2021.pr.mays.

Ferm, W., Spiers, J. C., Stetzer, M. R., & **Lindsey, B. A.** "Investigating student ability to follow and interact with reasoning chains." In Dyan Jones, Lin Ding, Adrienne Traxler (Eds.), *Proceedings of the 2016 Physics Education Research Conference* (2016): 120 – 123.
<http://www.compadre.org/per/items/detail.cfm?ID=14210>. ISBN/ISSN #/Case #/DOI #: 10.1119/perc.2016.pr.025

Spiers, J. C., Ferm, W., Stetzer, M. R., & **Lindsey, B. A.** "Probing student ability to construct reasoning chains: a new methodology." In Dyan Jones, Lin Ding, Adrienne Traxler (Eds.), *Proceedings of the 2016 Physics Education Research Conference* (2016): 328 – 331.
<http://www.compadre.org/per/items/detail.cfm?ID=14262>. ISBN/ISSN #/Case #/DOI #: 10.1119/perc.2016.pr.077

Lindsey, Beth A. and Megan L. Nagel. “Assessing Students’ Metacognitive Calibration With Knowledge Surveys.” In Paula V. Engelhardt, Alice D. Churukian, N. Sanjay Rebello (Eds.), *2012 Physics Education Research Conference*. AIP Conference Proceedings **1513** (2013): 258-261.
http://proceedings.aip.org/resource/2/apcpcs/1513/1/258_1.

Works in progress: Peer-reviewed Journal Articles

Lindsey, B. A., Stetzer, M., Speirs, J. C., Ferm Jr., W. N., & van Hulten, A. (Student Author - Undergraduate Student). Investigating student ability to follow reasoning chains: The role of conceptual understanding. Submitted to Phys. Rev. Phys. Educ. Res., Revising to resubmit.

Non-refereed articles and opinion pieces

Lindsey, Beth A. "Letter from the Editor." APS Forum on Education Newsletter, Spring 2016.
<http://www.aps.org/units/fed/newsletters/spring2016/editor.cfm>.

Lindsey, Beth A. "Letter from the Editor." APS Forum on Education Newsletter, Fall 2015.
<http://www.aps.org/units/fed/newsletters/fall2015/editor.cfm>.

Lindsey, Beth A. "Letter from the Editor." APS Forum on Education Newsletter, Summer 2015.
<http://www.aps.org/units/fed/newsletters/summer2015/editor.cfm>.

Lindsey, Beth A. "Letter from the Editor." APS Forum on Education Newsletter, Fall 2014.
<http://www.aps.org/units/fed/newsletters/fall2014/editor.cfm>.

Lindsey, Beth A. "Letter from the Editor." APS Forum on Education Newsletter, Summer 2014.
<http://www.aps.org/units/fed/newsletters/summer2014/editor.cfm>.

Lindsey, Beth A. "Letter from the Editor." APS Forum on Education Newsletter, Spring 2014.
<http://www.aps.org/units/fed/newsletters/spring2014/editor.cfm>.

Lindsey, Beth A. "Letter from the Editor." APS Forum on Education Newsletter, Fall 2013.
<http://www.aps.org/units/fed/newsletters/fall2013/editor.cfm>.

Lindsey, Beth A. "Letter from the Editor." APS Forum on Education Newsletter, Summer 2013.
<http://www.aps.org/units/fed/newsletters/summer2013/editor.cfm>.

Lindsey, Beth A., and Margaret L. Signorella "Physics lab renovation guided by instructional research."
Penn State Greater Allegheny Web Site, March 21, 2012.
<http://www.greaterallegheny.psu.edu/33640.htm>.

ORAL PRESENTATIONS

Invited Presentations

Lindsey, B. A. (Author and Presenter), "Using dual-process theories to engage with student reasoning," University of Pittsburgh Discipline-based Science Education Research Seminar, University of Pittsburgh Discipline-based Science Education Research Center, Pittsburgh, PA. (November 2019).

Lindsey, B. A. (Author and Presenter), "Leveraging understanding of energy from physics to overcome unproductive intuitions in chemistry," American Physical Society April Meeting, American Physical Society, Denver, CO. (April 2019)

- Lindsey, B. A.** (Author and Presenter), "Using dual-process theories to engage with student reasoning," Penn State Discipline-Based Education Research Group, Penn State, State College, PA. (March 2019).
- Lindsey, B. A.** (Author and Presenter), "Examining Student Reasoning About Potential Energy: Gravity, Electrostatics and Beyond," Gordon Research Conference Series: Physics and Education, Smithfield, RI. (June 2018).
- Lindsey, B. A.** (Author and Presenter), & Nagel, M. L. "The use of clickers to support improved self-assessment in introductory science courses," University of Pittsburgh Discipline-based Science Education Research Seminar, Pittsburgh, PA. (June 2017).
- Lindsey, B. A.** (Author and Presenter), "Examining Student Reasoning about Potential Energy", University of Maine Physics Department Colloquium, Orono, ME. (October 2015).
- Lindsey, B. A.** (Author and Presenter), "Examining Student Reasoning about Potential Energy", Invited Plenary Talk, Foundations and Frontiers of Physics Education Research, Bar Harbor, ME. (June 2015).
- Vicaro, M., Manlove, C. T., **Lindsey, B. A.** (Author and Presenter), Nagel, M. L., "Faculty Involvement," in "Without a Passport? Internationalization across the Curriculum: A Teaching Symposium", Penn State Greater Allegheny, McKeesport, PA. (May 2013).
- Lindsey, B. A.** (Author and Presenter), "Two Avenues for Improving Student Learning: Conceptual understanding of potential energy and students' metacognitive calibration." Ohio State University Physics Education Research Seminar, Columbus OH. (March 2013).
- Lindsey, B. A.** (Author and Presenter), "The Problem with Potential Energy: Using Research in Physics Education to Guide Curriculum Development," Penn State Erie Physics Seminar, Erie PA. (February 2013).
- Lindsey, B.A.** (Author and Presenter), L. Hsu, H. Sadaghiani, K. Cummings, and J. Taylor, "Impacting the attitudes of prospective teachers with Physics by Inquiry." 2012 Summer National Meeting of the American Association of Physics Teachers (AAPT), Philadelphia PA. (August 2012).
- Lindsey, B.A.** (Author and Presenter), "Physics Education Research at Penn State Greater Allegheny." University of Washington Physics Education Group Seminar, Seattle WA. (May 2012).
- Lindsey, B.A.** (Author and Presenter), "Learner's models of complex phenomena." Seattle Pacific University Energy Project Seminar, Seattle WA. (May 2012).
- Lindsey, B.A.** (Author and Presenter), "The problem with systems: Factors underlying student understanding of energy." 2011 Summer National Meeting of the AAPT, Omaha NE. (August 2011).
- Lindsey, B.A.** (Author and Presenter), "Work, Energy, and Systems: Using research on student reasoning to guide curriculum development." Ithaca College Physics Seminar, Ithaca, NY. (April 2011).
- Lindsey, B.A.** (Author and Presenter), "An investigation into student understanding of energy." University of Maryland Physics Education Group Seminar, College Park, MD. (March 2010).

Lindsey, B. A. (Author and Presenter), "An Investigation into Student Understanding of Work and Energy." CU-Boulder PERG Seminar, Boulder CO, Invited. (June 2007).

Lindsey, B. A. (Author and Presenter), "An Investigation into Student Understanding of Work and Energy." UNC Chapel Hill Physics Seminar, Chapel Hill NC. (June 2007).

Contributed Presentations

Mays, M., Stetzer, M. R., **Lindsey, B. A.** (Author). (August 1, 2021). Supporting student construction of alternative lines of reasoning, National Summer Meeting of the American Association of Physics Teachers, Virtual.

M. L. Nagel and **B. A. Lindsey** (Author). (April 2021). When good information goes bad: A new tool for tracking reasoning support for different answer options, ACS National Meeting Spring 2021, Virtual.

Lindsey, B. A. (Author and Presenter), Nagel, M. L. (March 1, 2021). Using reasoning chain construction tasks to inform research and instruction in general chemistry, X-DBER, Virtual.

Lindsey, B. A. (Author and Presenter), Stetzer, M. R., & Hager, W. W. (July 22, 2020). "Investigating the role of cognitive reflection in following reasoning chains," National Summer Meeting of the American Association of Physics Teachers, AAPT, Virtual.

Stetzer, M. R., **Lindsey, B. A.** (Author), Moyer, R., Speirs, J. C., & Kryjevskaja, M. (July 22, 2020). "Scaffolding Student Exploration of Alternative Approaches," National Summer Meeting of the American Association of Physics Teachers, AAPT, Virtual.

Mays, M. M., Stetzer, M. R., & **Lindsey, B. A.** (Author). (July 21, 2020). "Examining and Supporting Student Construction of Alternative Lines of Reasoning," National Summer Meeting of the American Association of Physics Teachers, AAPT, Virtual.

Kryjevskaja, M., **Lindsey, B. A.**, Stetzer, M. R., Boudreaux, A., & Heron, P. R. L.. (July 24, 2019). "Classroom Interventions to Promote Coherence in Student Reasoning," National Summer Meeting of the American Association of Physics Teachers, AAPT, Provo, UT.

Stetzer, M. R., Speirs, J. C., **Lindsey, B. A.** (Author), & Kryjevskaja, M. (July 24, 2019). "Exploring Student Reasoning in Physics via Reasoning Chain Construction Tasks," National Summer Meeting of the American Association of Physics Teachers, AAPT, Provo, UT.

Speirs, J. C., Stetzer, M. R., & **Lindsey, B. A.** (July 24, 2019). "Investigating Student Reasoning Chains via Network Analysis," National Summer Meeting of the American Association of Physics Teachers, AAPT, Provo, UT.

Nagel, M. L., & **Lindsey, B. A.** (Author). (June 19, 2019). "Using dual-process theories to explore student reasoning," Gordon Research Conference on Chemistry Education Research, Bates College, Lewiston, ME, peer-reviewed/refereed.

Lindsey, B. (January 29, 2019). "Using dual-process theories to engage with student reasoning," Penn State Greater Allegheny Research Brown Bag Series, Penn State Greater Allegheny, McKeesport, PA.

- Speirs, J. C., Stetzer, M. R., & **Lindsey, B. A.** (Author Only), "Examining Student Tendencies to Explore Alternate Possibilities," National Summer Meeting of the American Association of Physics Teachers, Washington, DC. (August 2018).
- Nagel, M. L., & **Lindsey, B. A.** (Author Only). "In search of appropriate analogies for potential energy in chemical systems," Biennial Conference on Chemistry Education, American Chemical Society. (July 2018).
- Lindsey, B. A.** (Presenter & Author), Stetzer, M. R., Speirs, J. C., & Ferm, W. J. "Investigating factors that affect student ability to follow reasoning chains," National Summer Meeting of the American Association of Physics Teachers, Washington, DC. (July 2018).
- Speirs, J. C., Stetzer, M. R., **Lindsey, B. A.** (Author Only), & Kryjevskaja, M. "Leveraging Dual-Process Theories of Reasoning to Impact Student Performance," National Summer Meeting of the American Association of Physics Teachers, Washington, DC. (July 2018).
- Stetzer, M. R., Moyer, R. P., Speirs, J. C., & **Lindsey, B. A.** (Author Only). "Probing the Nature of Student Reasoning Using Modified Chaining Tasks," National Summer Meeting of the American Association of Physics Teachers, Washington, DC. (July 2018).
- Lindsey, B. A.** (Presenter & Author), & Nagel, M. L. "Leveraging understanding of energy from physics to overcome unproductive intuitions in chemistry," Western Pennsylvania Section of the AAPT Spring Meeting, Western PA Section of the AAPT, McKeesport, PA. (March 2018).
- Boudreaux, A., **Lindsey, B. A.** (Author only), Stetzer, M. R., Gette, C. R., & Grosz, N. R. "Dual-Process Theory: A Lens for Interpreting Student Reasoning," National Summer Meeting of the American Association of Physics Teachers, AAPT, Cincinnati, OH. (July 2017).
- Speirs, J. C., Stetzer, M. R., & **Lindsey, B. A.** (Author only). "Using Johnson-Laird's Mental Models Framework to Examine Student Reasoning," National Summer Meeting of the American Association of Physics Teachers, AAPT, Cincinnati, OH. (July 2017).
- Lindsey, B. A.** (Presenter & Author), Boudreaux, A., Stetzer, M. R., & Speirs, J. C. "Using reasoning-chain interviews to examine evidence for Dual-Process Theory," National Summer Meeting of the American Association of Physics Teachers, AAPT, Cincinnati, OH. (July 2017).
- Nagel, M. L., and **B. A. Lindsey** (Author only), "Exploring Examples from physics to best support student understanding of potential energy in chemistry." Biennial Conference on Chemistry Education, Greeley, CO. (August 2016).
- Boudreaux, A., and **B. A. Lindsey** (Author only), "Examining students' multi-step reasoning in energy contexts." 2016 Summer National Meeting of the AAPT, Sacramento, CA. (July 2016).
- Speirs, J. C., W. Ferm Jr., M. Stetzer, **B. A. Lindsey** (Author only), "Probing Student Ability to Construct Reasoning Chains: A New Methodology." 2016 Summer National Meeting of the AAPT, Sacramento, CA. (July 2016).
- Lindsey, B. A.** (Author and Presenter), and A. Boudreaux, "Distinguishing reasoning difficulties from conceptual difficulties in energy contexts." 2016 Winter National Meeting of the AAPT, New Orleans, LA. (January 2016).

- Stetzer, M., J. C. Speirs, **B. A. Lindsey** (Author only), and M. Kryjevskaja, "Investigating Student Ability to Construct Qualitative Reasoning Chains." 2016 Winter National Meeting of the AAPT, New Orleans, LA. (January 2016).
- Lindsey, B. A.** (Author and Presenter), and M. L. Nagel, "Energy in physics and chemistry: Helping students draw interdisciplinary connections." 2015 Summer National Meeting of the AAPT, College Park, MD. (July 2015).
- Lindsey, B. A.** (Author and Presenter), and M. L. Nagel, "Scaffolding student understanding of energy in physics and chemistry." 2015 Winter National Meeting of the AAPT, San Diego, CA. (January 2015).
- Nagel, M. L., and **B. A. Lindsey** (Author only), "Success of an interdisciplinary approach to introducing electrostatic potential energy for introductory chemistry." Central Regional Meeting of the American Chemical Society, Pittsburgh, PA. (October 2014).
- Lindsey, B. A.** (Author and Presenter), and M. L. Nagel, "Exploring student understanding of the linkage between energy concepts in chemistry and physics." Mid Atlantic Section Meeting of the American Physical Society, State College, PA. (October 2014).
- Nagel, M. L., and **B. A. Lindsey** (Author only), "Exploring the foundation of student understanding of energy topics in general chemistry." Biennial Conference on Chemistry Education, Allendale, MI. (August 2014).
- Nagel, M. L., and **B. A. Lindsey** (Author only), "Using clickers to promote metacognitive awareness in the introductory chemistry classroom." Biennial Conference on Chemistry Education, Allendale, MI. (August 2014).
- Lindsey, B. A.** (Author and Presenter), and M. L. Nagel, "Investigating the metacognitive calibration of students in introductory courses." 2014 Summer National Meeting of the AAPT, Minneapolis, MN. (July 2014).
- Nagel, M. L., and **B. A. Lindsey** (Author only), "Interdisciplinary approach to electrostatic potential energy for introductory chemistry." 247th ACS National Meeting, American Chemical Society, Dallas, TX. (March 2014).
- Nagel, M. L., and **B. A. Lindsey** (Author only), "Metacognitive abilities of introductory chemistry students: A qualitative investigation." 247th ACS National Meeting, American Chemical Society, Dallas, TX. (March 2014).
- Lindsey, B. A.** (Author and Presenter) and K. Willard, "PAIRing High School and College Teachers," Western Pennsylvania Section of the AAPT Fall Meeting, Erie, PA. (October 2013).
- Lindsey, B. A.** (Author and Presenter), "Student reasoning on gravitational and electrostatic potential energy." 2013 Summer National Meeting of the AAPT, Portland, OR. (July 2013).
- Lindsey, B. A.** (Author and Presenter), and M. L. Nagel, "Investigation of Factors Affecting Students' Metacognitive Calibration." Western Pennsylvania Section of the AAPT Fall Meeting, Erie, PA. (October 2012).

Lindsey, B. A. (Author and Presenter), and M. L. Nagel, “Assessing Students’ Metacognitive Calibration with Knowledge Surveys.” 2012 Physics Education Research Conference, Philadelphia, PA. Poster. (August 2012).

Lindsey, B. A. (Author and Presenter), and R. Scherr. “Comparing written and video data of learners’ understanding of energy.” 2012 Summer National Meeting of the AAPT, Philadelphia, PA. (August 2012).

Heron, P. R. L., P. S. Shaffer, and **B. A. Lindsey** (Author Only), “Student understanding of work and energy concepts at the university level,” The World Conference on Physics Education, International Research Group on Physics Teaching, Istanbul, Turkey. (July 2012).

Lindsey, B. A. (Author and Presenter), “Student conceptions of electric potential energy in introductory E&M.” Western Pennsylvania Section of the AAPT Fall Meeting. (October 2011).

Lindsey, B. A. (Author and Presenter), “Work, Energy, and Systems: Using Research on Student Reasoning to Guide Curriculum Development.” Campus Physics Meeting, Penn State University Physics Department, State College, PA. (October 2010).

Lindsey, B. A. (Author and Presenter), P. R. L. Heron, P. S. Shaffer, “Investigating student thinking about systems in gravitational and elastic contexts.” 2009 Summer National Meeting of the AAPT, Chicago, IL. (February 2009).

Lindsey, B. A. (Author and Presenter), P. R. L. Heron, P. S. Shaffer, L. C. McDermott, “Student understanding of energy: Difficulties related to systems.” 2008 Winter National Meeting of the AAPT, Baltimore, MD. (January 21, 2008).

Lindsey, B. A. (Author and Presenter), P. R. L. Heron, P. S. Shaffer, L. C. McDermott, “Helping students relate work and changes in energy.” 2007 Winter National Meeting of the AAPT, Seattle, WA. (January 2007).

Lindsey, B. A. (Author and Presenter), P. R. L. Heron, P. S. Shaffer, L. C. McDermott, “Helping students relate work and changes in energy.” American Physical Society Northwest Section, Tacoma, WA. (May 2006).

Lindsey, B. A. (Author and Presenter), P. R. L. Heron, P. S. Shaffer, L. C. McDermott, “Student difficulties with the concept of work in introductory physics.” APS March Meeting, American Physical Society, Los Angeles, CA. (March 2005).

Lindsey, B. A. (Author and Presenter), P. R. L. Heron, P. S. Shaffer, L. C. McDermott, “Helping students to develop a functional understanding of energy conservation.” Summer 2004 National Meeting of the AAPT, Sacramento, CA. (August 2004).

Lindsey, B. A. (Author and Presenter), P. R. L. Heron, P. S. Shaffer, L. C. McDermott, “Helping students to develop a functional understanding of energy conservation.” American Physical Society Northwest Section, Moscow, ID. (May 2004).

Workshops

Lindsey, B. A. (Presenter & Author), Boudreaux, A., Kryjevskaja, M., Stetzer, M., & Heron, P. “Examining the Relationships Among Intuition, Reasoning, and Conceptual Understanding in

Physics," workshop presented at the 2021 Summer National Meeting of the AAPT, Virtual. (July 2021).

Lindsey, B. A. (May 6, 2019 - June 22, 2019). "Faculty Mentor for Graduate and Post-Doc Symposium," Foundations and Frontiers of Physics Education Research, Bar Harbor, ME.

Boudreaux, A., Kryjevskaja, M., **Lindsey, B. A.** (Presenter & Author), Stetzer, M., & Heron, P. "Examining the Relationships Among Intuition, Reasoning, and Conceptual Understanding in Physics," workshop presented at the 2018 Summer National Meeting of the AAPT, Washington, DC. (July 2018).

Stetzer, M., A. Boudreaux, P. Heron, M. Kryjevskaja, and **B. A. Lindsey** (Author and Presenter), "Examining the Relationships among Intuition, Reasoning, and Conceptual Understanding in Physics," workshop presented at the 2017 Summer National Meeting of the AAPT, Cincinnati, OH. (July 2017).

Stetzer, M., A. Boudreaux, P. Heron, M. Kryjevskaja, and **B. A. Lindsey** (Author and Presenter), "Examining the Relationships among Intuition, Reasoning, and Conceptual Understanding in Physics," workshop presented at the 2016 Winter National Meeting of the AAPT, New Orleans, LA. (January 2016).

Nagel, M. L., and **B. A. Lindsey** (Author and Presenter), "Unlocking Their Potential: Improving student understanding of energy," in "PA STEM Vision Conference: Connecting Classrooms to Careers." ASSET Inc., and Norwin School District, Pittsburgh, PA. (May 2014).

Nagel, M. L., and **B. A. Lindsey** (Author and Presenter), "Do Students Know what they Know? The need for improved Self-Assessment Skills among Students entering Post-Secondary STEM Courses." in "Second Annual STEM Conference," ASSET Inc., and Norwin School District, Pittsburgh, PA. (February 2013).

McDermott, L. C., and **B. A. Lindsey** (Presenter Only), "Research in Physics Education: A resource for improving student learning." Workshop for New Physics and Astronomy Faculty, American Physical Society, American Association of Physics Teachers, College Park, MD. (June 2012).

McDermott, L. C., P. S. Shaffer, and **B. A. Lindsey** (Presenter Only), "Research in Physics Education: A resource for improving student learning." Workshop for New Physics and Astronomy Faculty, American Physical Society, American Association of Physics Teachers, College Park, MD. (June 2010).

McDermott, L. C., M. S. Stetzer, and **B. A. Lindsey** (Presenter Only), "Research in Physics Education: A resource for improving student learning." Workshop for New Physics and Astronomy Faculty, American Physical Society, American Association of Physics Teachers, College Park, MD. (November 2009).

Lindsey, B. A. (Author and Presenter), "Guided-inquiry based teaching methods: An example from electric circuits." Workshop presented to faculty as part of the Georgetown University Teaching, Learning, and Innovation Summer Institute, May 2009.

Lindsey, B. A. (Author and Presenter), "Guided-inquiry based teaching methods: An example from Light and Shadow." Workshop presented to undergraduate students enrolled in a Biology teaching pedagogy course at Georgetown University, March 2009.

McDermott, L. C., P. S. Shaffer, and **B. A. Lindsey** (Presenter Only), “Research in Physics Education: A resource for improving student learning.” Workshop for New Physics and Astronomy Faculty, American Physical Society, American Association of Physics Teachers, College Park, MD. (November 2008).

McDermott, L. C., P. S. Shaffer, and **B. A. Lindsey** (Presenter Only), “Research in Physics Education: A resource for improving student learning.” Workshop for New Physics and Astronomy Faculty, American Physical Society, American Association of Physics Teachers, College Park, MD. (June 2008).

Lindsey, B. A. (Author and Presenter), “Assessing student learning with pretests and post-tests.” Workshop presented to faculty as part of the Georgetown University Teaching, Learning, and Innovation Summer Institute, May 2008.

GRANTS

Active:

Lindsey, B.A. (Penn State Greater Allegheny), Kryjevskaja, M. (North Dakota State University), Stetzer, M. (University of Maine), Heron, P. (University of Washington), Boudreaux, A. (Western Washington University). "Collaborative Research: Establishing a new model for research-based curriculum development in physics aligned with dual-process theories of reasoning and decision-making," NSF Award #: DUE-1821400, \$158,914. (Submitted: December 12, 2017, Awarded: June 15, 2018, Funding Period: October 2018 – September 2023).

Pending:

Lindsey, B.A. (Penn State Greater Allegheny), Kryjevskaja, M. (North Dakota State University), Stetzer, M. (University of Maine), Speirs, J. (University of New England). “Collaborative Research: Developing, testing, and disseminating reasoning chain construction tools for use in physics and chemistry,” National Science Foundation, (Submitted: 21 July 2021).

Completed:

Lindsey, B.A. (Penn State Greater Allegheny), Kryjevskaja, M. (North Dakota State University), Stetzer, M. (University of Maine), Heron, P. (University of Washington), Boudreaux, A. (Western Washington University). “Collaborative Research: Examining the development of student reasoning skills through scaffolded physics instruction.” NSF Award #: DUE-1431541, \$53,226. (Submitted: February 4, 2014, Awarded: August 17, 2014, Funding Period: January 2015 – December 2019).

Lindsey, B. A. (Penn State Greater Allegheny), Willard, K. (Monessen High School). “PAIR Project,” APS – Physics and Instructional Resources program, \$1323. (Submitted: September 14, 2012, Funding period: October 2012 – June 2013).

Lindsey, B. A. (Penn State Greater Allegheny), Scherr, R. E. (Seattle Pacific University), “Scholar-in-Residence at Seattle Pacific University,” AAPT - Physics Education Research Topical Group, \$1,900.00. (Submitted: October 10, 2011, Funding period: May 16, 2012 - May 24, 2012).

SERVICE

Penn State Greater Allegheny

Campus Leadership:

- Faculty Senate Chair (elected), July 2016 – June 2017
- Faculty Senate Chair-Elect (elected), July 2015 – June 2016

Administrative Support Work:

- Campus Representative for the College of Health and Human Development
- Campus Physics Program Coordinator

Recruitment and Retention Activities:

- STEM Day Recruitment event (contributor), April 2017
- Pi Day events (contributor), March 2017
- Academic Round Table (presenter), October 2016
- Be a Penn State Student for a Day (presenter), September 2014 – November 2014
- Engineering Spend a Summer Day (presenter), August 2014

Outreach:

- Girls Undertaking Interest in Design, Engineering, and Science (GUIDES) (organizer and camp co-leader), June 2017.

Committee work:

- Campus Promotion and Tenure Committee (member, elected), August 2018 – Present
 - Faculty Affairs Committee (chair), August 2021 – Present
 - Faculty Affairs Committee (member), August 2019 – Present
 - Burley Scholarship Committee (member), November 2016
 - Curricular Affairs Committee (member), August 2015 – June 2016
 - Academic Affairs Committee (chair), August 2012 – July 2014
 - Academic Affairs Committee (member), August 2011 – June 2015
 - Recruitment and Retention Committee (member), January 2014 – May 2014
 - Sub-committee on Academics and Athletics (chair), August 2013 – December 2013
 - Sub-committee on Underprepared Students (chair), September 2011 – August 2012
- #### Search Committees:

- Engineering Faculty, March 2021 – June 2021
- Chancellor and Chief Academic Officer, October 2014 – February 2016
- Division of Undergraduate Studies Coordinator, April 2015 – May 2015
- Athletic Director, August 2014 – October 2014
- Accounting Instructor, September 2013 – March 2014
- Marketing Faculty, March 2013 – May 2013
- Business Faculty, October 2010 – January 2011

Educational Testing Service

- AP Physics C Test Development Committee (member), November 2015 – June 2020.

American Physical Society (member), 2004 – Present

- Forum on Education (member), 2004 – Present
- Topical Group on Physics Education Research (member), 2014 – Present
- Forum on Education: APS/AAPT Member at Large (elected), January 2017 – January 2020.
- Forum on Education Newsletter Editor-in-Chief (elected), January 2013 – April 2016

Forum on Education Newsletter Editor (appointed), Fall 2012

American Association of Physics Teachers (member), 2004 – Present

Committee on Research in Physics Education: (member, appointed), 2014 – 2017

Western PA Section: President (elected), 2017 – 2018

Western PA Section: Vice President (elected), 2015 – 2017

Western PA Section: Secretary/Treasurer (elected), 2013 – 2015

Western PA Section (member), 2010 – Present

Journal Referee

Physical Review Physics Education Research

American Journal of Physics

African Journal of Research in Science, Technology, and Mathematics Education

Physics Education Research Conference Proceedings

Grant Review Panels

NSF: EHR Core Research

Outreach Activities

Grand Award Judge for Intel International Science and Engineering Fair 2015, Society for Science and the Public, Judge, May 2015

ASSET Inc., Consultant, March 2013