William Lindsay
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EDUCATION

University of Colorado Boulder; December 2020 — Boulder, Colorado
Ph.D. Curriculum and Instruction: STEM Education
Graduate Certificate: Quantitative Methods for Behavioral Sciences

University of Colorado Boulder; May 2019 — Boulder, Colorado
M.A. Curriculum and Instruction: STEM Education

University of Colorado Denver; May 2014 — Denver, Colorado
Secondary Science Teaching License

The Colorado College; May 2013 — Colorado Springs, Colorado
B.A. Biochemistry, Minor: Education

DISSERTATION

Title: Bridging reform ideals: Crafting coherence with a no-excuses charter network

Committee: Valerie Otero (Chair), Erin Furtak, Victoria Hand, Tammy Sumner, David Webb

ACADEMIC APPOINTMENTS

School of Education, University of Colorado Boulder — 2021 - Current
Assistant Teaching Professor, Co-Director CU Teach

- Teach practicum-based licensure courses for secondary science and math teacher candidates at the undergraduate, post-baccalaureate, and master's levels
- Oversee programmatic curriculum, including leading the program's reauthorization efforts, partnering with faculty to redesign course content and sequencing to meet new state standards and integrate issues of equity and justice, and designing new pathways to teacher licensure
- Market the program including increasing college presence, conducting outreach and recruitment at CU and in partner communities, and planning community events
- Review program applications and advise candidates at different stages of licensure obtainment

Institute of Cognitive Science, University of Colorado Boulder — 2021
Research Associate

- Developed high school biology curriculum aligned with the Next Generation Science Standards (NGSS) for the OpenSciEd Initiative
- Designed and evaluated data-excursions with researchers from TERC to promote mathematical and computational thinking in high school biology courses
- Planned professional learning for rural science teachers focused on designing assessments that integrate students' interest and identity with their usage of scientific practices and concepts

School of Education, University of Colorado Boulder — 2016 - 2020
Graduate Research Assistant

- Worked as a qualitative, quantitative, and mixed-methods researcher for the Learning Assistant, Noyce Teacher Research Teams, and Physics through Evidence, Empowerment through Reasoning programs

GRANTS, AWARDS, AND FELLOWSHIPS

- Colorado House Bill 24-1446: *Professional Development for Science Teachers*, Personnel, Colorado Department of Education, $3,000,000 (2025)
- Socratic Tutor for Introduction to Biology Students, Co-PI, Custom GPT, $6,000 (2024)
- Community Centered Pathways for Equity and Justice in STEM Teaching, PI, Robert Noyce Scholarship Program, $1,198,468 (2023-2027)
- Professional Learning for Supporting Students in Making Sense of the World using Mathematics, Co-PI, WISE Grant, $11,000 (2022-2023)
- Research-Based Instructional Practices for Phenomenon-Based Science Teaching and Learning, PI, STeLLA CO^2(b), $21,400 (2022)
- Preparing Teachers to Design Tasks to Support, Engage, and Assess Science Learning in Rural Schools, Research Personnel, NSF DRK-12 Grant, $2,979,000 (2021)
- CU Boulder School of Education Outstanding Teaching Award (2021)
- CU Boulder Graduate Instructor Teaching Excellence Award (2020)
- National Science Foundation Graduate Research Fellowship Program Honorable Mention (2018)
- School of Education Doctoral Assistantship Award, CU Boulder, $19,000/year (2017-2020)
- School of Education Doctoral Fellowship Award, CU Boulder, $19,000/first year, $2,000/subsequent years (2016-2020)
- AmeriCorps Education Award, $5,500 each (2014, 2015)
- Amgen Teaching Fellowship, $1,000 (2013)
- Merck-AAAS Undergraduate Research Grant, $3,000 (2011)
- American Chemical Society Undergraduate Analytical Chemist Award (2011)

JOURNAL ARTICLES

Lindsay, W. E., & Otero, V. K. (2024). "Students really benefited from that hybridization": Facilitated sensemaking in a no-excuses charter network. *Science Education*.

Lindsay, W. E., & Otero, V. K. (2023). Leveraging purposes and values to motivate and negotiate reform. *Science Education, 107*(6), 1531-1560.

Martins, J., & **Lindsay, W.E.** (2022). Evaluation of high school student responses to the Colorado Learning Attitudes about Science Survey. *Physical Review Physics Education Research, 18*(1).

Wingert, K., Jacobs, J., **Lindsay, W.E.**, Lo, A. S., Hermann-Abell, C. F., & Penuel, W. R. (2022). Understanding the priorities and practices of rural science teachers: Implications for designing professional learning. *The Rural Educator*, 43(3), 26-40.

CONFERENCE PROCEEDINGS

Lo, A. S., Bekins, A., **Lindsay, W.E.,** Martin, A., Newberg, J., Smith, J., Gagnon, R., Knight, J., Knoblock, R., Larm, R., Scott, A., Strode, P., Stennett, B., & Cherbow, K. (2024, Jan). A practitioner's perspective on engaging in cross-stakeholder collaborations to enhance secondary science preservice preparation programs. Paper presented at the Association for Science Teacher Education International Conference, New Orleans, LA.

Lo, A.S., Glidewell, L., O'Connor, K., Allen, A., Herrmann-Abell, C.F., Penuel, W.R., Winger, K., **Lindsay, W.E.** (June, 2022). Promoting shifts in teachers' understanding and use of phenomena in instruction and assessment. *Proceedings of the 16th International Conference of the Learning Sciences* [Hiroshima, JP, June 6-10, 2022].

Mitchell-Polka, K., **Lindsay, W.E.**, Martins, J., & Otero, V.K. (2020). The physics classroom as a space for empowerment. *2020 PERC Proceedings* [Virtual Conference, July 22-23, 2020], edited by S. Wolf, M. B. Bennett, and B. Frank.

Lindsay, W.E., & Otero, V.K. (2020). The possibilities and limitations of infrastructuring with a no-excuses charter network. *Proceedings of the 14th International Conference of the Learning Sciences* [Virtual Conference, June 19-24, 2020], edited by M. Gresalfi and I.S. Horn.

Lindsay, W.E., Widman, S., & Garcia, M. (2019). The association between sustained professional development and physics learning. *2019 PERC Proceedings* [Provo, UT, July 24-25, 2019], edited by Y. Cao, S. Wolf, and M. B. Bennett.

Lindsay, W.E., Otero, V.K., & Belleau S. (2018). PEER suite: A holistic approach to supporting inductive pedagogy implementation. *2018 PERC* Proceedings [Washington, DC, August 1-2, 2018], edited by A. Traxler, Y. Cao, and S. Wolf.

REFEREED CONFERENCE PAPERS/PRESENTATIONS

Lindsay, W.E. & Her Many Horses, I. (2024, May). Preparing to teach for equity and justice: The CU Teach equity framework. Paper presented at the UTeach STEM Educators Conference, Austin, TX.

Lindsay, W. E., & Otero, V. K. (2024, March). Making sense of reform incoherence in a no-excuses charter network. Paper presented at the annual meeting of the National Association of Research in Science Teaching, Denver, CO.

Lindsay, W.E., Martin, A., Knight, J., Strode, P., & Lo, A. S. (2024, Jan). Importance of clear roles and shared goals for supporting meaningful collaborations. Paper presented at the Association for Science Teacher Education International Conference, New Orleans, LA.

Lindsay, W.E. (2023, June). Integrating phenomenon-based science instruction and storylines into the problem-based instruction curriculum. Paper presented at the UTeach STEM Educators Conference, Austin, TX.

Lindsay, W.E., Avena, J., & McIntosh, B. (2021, April). Supporting emergency remote teaching: Learning Assistants at the boundary. Paper presented at the annual meeting of the American Educational Research Association, Virtual Conference.

Lindsay, W.E. (2021, April). Perceptions of coherence: Learning about systems and structures through participatory redesign and implementation. Paper presented at the annual meeting of the National Association of Research in Science Teaching, Virtual Conference.

Lindsay, W.E. (2020, March). Making sense of reform: Hybridizing local and ideal instructional practices. Paper presented at the annual meeting of the National Association of Research in Science Teaching, Virtual Conference.

Lindsay, W.E., & Otero, V.K. (2019, April). Institutional tensions surfaced by pedagogical reform: NGSS implementation in a "no-excuses" context. Paper presented at the annual meeting of the American Educational Research Association, Toronto, CA.

Lindsay, W.E., & Otero, V.K. (2019, April). The influence of institutional elements in reforming. Paper presented at the annual meeting of the National Association of Research in Science Teaching, Baltimore, MD.

CONTRIBUTED CONFERENCE PAPERS

Lindsay, W.E., & Otero, V.K. (2019, July). Coping with reform: Epistemic contradictions for highly successful physics students. Paper presented at the summer meeting of the American Association of Physics Teachers, Provo, UT.

Lindsay, W.E., Martins, J., Otero, V.K., & Belleau, S. (2018, July). When teacher evaluation and support structures deter NGSS implementation. Paper presented at the summer meeting of the American Association of Physics Teachers, Washington D.C.

Lindsay, W.E., Martins, J., Otero, V.K., & Belleau, S. (2017, July). Socio-cultural and socio-cognitive curricular expectations: Tensions in PET-HS implementation. Paper presented at the summer meeting of the American Association of Physics Teachers, Cincinnati, OH.

Martins, J., **Lindsay, W.E.**, Otero, V.K., & Belleau, S. (2017, July). Curricular resources for NGSS implementation in an NGSS-aligned classroom. Paper presented at the summer meeting of the American Association of Physics Teachers, Cincinnati, OH.

PUBLISHED CURRICULUM

OpenSciEd

- Led a team of writers in the development of an open-sourced high school biology unit where students investigate the benefits and burdens of being part of a complex ecosystem. Available from: https://www.openscied.org/instructional-materials/b-1-ecosystem-interactions-dynamics/
- Codesigned lessons for an open-sourced high school biology unit where students investigate urbanization as a driving force for evolution. Available from: https://www.openscied.org/instructional-materials/b-4-natural-selection-evolution/
- Codesigned lessons for an open-sourced high school biology unit where students investigate the evolution of polar bears and consider their future as the climate changes. Available from: https://www.opensciedhsfieldtest.org/b5

inquiryHub

- Codesigned open-sourced chemistry units and lessons where students investigate ocean acidification and nuclear proliferation using a storyline approach with researchers, teachers, students, and administrators. Available from: https://www.colorado.edu/program/inquiryhub/curricula/inquiryhub-chemistry

Physics through Evidence, Empowerment through Reasoning (PEER Physics)

- Contributed to designing and evaluating curricular materials for PEER Physics, including student-facing activities, teacher guides, engineering design activities, and 3D assessments. Available from: https://peerphysics.org/

HIGHER EDUCATION TEACHING EXPERIENCE

University of Colorado Boulder 2023 - 2024

Instructor, EDUC 2035: Designing STEM Learning Environments

- Designed, taught, and supervised an introductory STEM lesson design course for STEM and elementary majors interested in exploring teaching as a career

University of Colorado Boulder 2023 - 2024
Instructor, EDUC/MCDB 4811/6811: Teaching and Learning Biology
- Redesigned a course with a MCDB faculty member designed to support future and current K-16 biology educators in exploring issues related to how people learn and teach biology

University of Colorado Boulder 2022
Instructor, EDUA 5018: Leading in Schools and Systems for Transformation in Science Assessment
- Redesigned and taught an online capstone course for master's students completing a stackable Science Assessment Certificate that can be applied to a master's degree in Teacher Leadership

University of Colorado Boulder 2022 - 2024
Instructor, EDUC 4822/5822: Teaching and Learning Chemistry
- Taught a lab-based course designed to support future and current K-16 chemistry educators in exploring issues related to how people learn and teach chemistry

University of Colorado Boulder 2022 - 2024
Instructor, EDUC 4385/5385: Phenomenon-Based Science Instruction
- Redesigned, taught, and supervised practicum for the second STEM methods course for undergraduate, post-baccalaureate, and master's candidates admitted into the CU Teach program

University of Colorado Boulder 2021 - 2024
Instructor, EDUC 4060/5060: Classroom Interactions
- Taught and supervised practicum for the first STEM methods course for undergraduate, post-baccalaureate, and master's candidates admitted into the CU Teach program

University of Colorado Boulder 2020
Instructor, EDUC 4610: Becoming a Learning Assistant
- Taught online and in-person pedagogy courses concentrated on preparing undergraduates to work as Learning Assistants through targeted reflections on their teaching practices

University of Colorado Boulder 2019, 2021 - 2023
Instructor, EDUC 2020: Step 1 Inquiry Approaches to Teaching
- Taught and supervised practicum for an introductory science lesson design course for pre-service elementary teachers and STEM majors interested in exploring teaching as a career

Relay Graduate School of Education 2018 - 2020
Adjunct Professor, Science Methods 4, 5
- Taught a master's-level science content course for in-service teachers focused on facilitating rigorous discourse, designing 5E lessons, and engaging students in model-based inquiry

University of Colorado Boulder 2017 - 2018
Instructor, PHYS/EDUC 1580: Energy and Interactions
- Taught an introductory science pedagogy and physics content course designed for pre-service elementary teachers and non-physics majors

University of Colorado Bolder 2017
Instructor, PHYS/EDUC 6804: Physics and Everyday Thinking
- Taught a master's-level summer course for in-service teachers focused on incorporating model building and practices of scientific induction into instruction

K-12 TEACHING EXPERIENCE

Denver Schools of Science and Technology (DSST): Cole High School, Denver, CO 2015 - 2016
Chemistry Teacher

- Founded the chemistry department at DSST: Cole High School
- Mentored student teachers from the University of Denver

Harrison High School, Colorado Springs, CO 2013 - 2015
AP Chemistry, Biochemistry, and Biology Teacher

- Designed curriculum for the first years of teaching biochemistry and AP chemistry at Harrison
- Coached the Harrison Women Varsity Tennis Team

PROFESSIONAL LEARNING FACILITATION

CU Teach Professional Learning Facilitator 2022 - Current

- Procured funding from the Women Investing in the School of Education to codesign and facilitate a professional learning for CU Teach math mentor teachers (2023)
- Procured funding from BSCS Science Learning to codesign and facilitate a professional learning workshop for CU Teach science mentor teachers with K-12 science educators and STEM university faculty (2022)

Teach Engineering/NCWIT Professional Learning Facilitator 2022 - Current

- Facilitated an online professional learning workshop for K-12 STEM teachers designed to support the integration of engineering design into K-12 curriculum

5D MASTERS Project Professional Learning Facilitator 2021

- Facilitated a professional learning sequence with rural science teachers to test design efficacy before a randomized control trial and open-source dissemination of resulting materials

OpenSciEd Professional Learning Facilitator 2021

- Trained state and district science education leaders to facilitate a professional learning sequence for teachers adapting OpenSciEd curricular materials
- Led codesign workshop that included teachers, administrators, and researchers to build initial storylines for OpenSciEd biology units

PEER Physics Professional Learning Facilitator 2017 - 2020

- Facilitated professional learning sessions for high school teachers collaborating with PEER Physics, including in-person teachers, virtual participants, and at Seattle Public Schools

INVITED PRESENTATIONS

Lindsay, W.E. & Her Many Horses, I. (2024, September). Phenomenon and Problem-Based STEM Teaching. Teacher Cadets Annual Summit, Littleton, CO.

Lindsay, W.E. & Her Many Horses, I. (2023, October). Disrupting Traditional Methods and Narratives of STEM Teaching. Discover Teaching and Leadership Conference, Boulder, CO.

Lindsay, W.E. & Her Many Horses, I. (2022, September). Disrupting Traditional Methods and Narratives of STEM Teaching. Discover Teaching and Leadership Conference, Boulder, CO.

Lindsay, W.E. & Her Many Horses, I. (2021, October). Figuring stuff out: Doing STEM, investigative phenomenon, and the next generation of STEM teachers. Discover Teaching and Leadership Conference, Boulder, CO.

Lindsay, W.E., (2021, June). Supporting diverse learners in modeling in inquiryHub Biology. Louisiana Department of Education Teacher Leadership Summit, Virtual Workshop.

Jacobs, J., Penuel, W.R., Wingert, K., Lo, A., Wilson, C., Herrmann-Abell, C.F., & **Lindsay, W.E.** (2021, June). Preparing teachers to design 5D tasks to support and assess science learning. NSF DRK12 PI Meeting, Virtual Meeting.

Wingert K., Biddy Q., Hermann-Abell C.F., Jacobs J., **Lindsay W.E.**, Lo A., Penuel W.R., Wilson C. (2021, May). Making aligned science tasks equitable for rural students. NSF STEM for All Video Showcase: Learning from Research and Practice. Virtual Conference.

SERVICE

University of Colorado Boulder

- Master's Advisor
    - Stephen Maher, Kayla Cabanting, Nicholas Bianco, Colin Welsh, Jacob Clauson, Jackson Avery, Jennifer Hill, Calvin Lehn, Hunter Mayhew, Jo Robbins, Adam Spicer, Michael Stark
- Member Student Thesis Committees
    - Master's Thesis: Andrew Arnold, Samantha Babin, Grace Edwards, Sophie Friedman, Nicholas Ranhe
    - Undergraduate Honors Thesis: Kaitlyn Sudowsky, Natalie Golovanov
- Member Campus Climate, Sustainability, Justice, and Education Working Group 2024 - Current
- Graduate Assistantship Field Coach Supervisor 2023 - Current
- Co-Chair Teachers of Color and Allies Planning Committee 2022 - Current
- Chair School of Education Halloween Planning Committee 2022 - Current
- Member School of Education Teacher Education Leadership Team 2021 - Current
- Member Faculty Search Committee (Assistant Professor of Secondary Humanities) 2023 - 2024
- Member PEUC Committee (Ashley Cartun) 2023
- Member School of Education Strategic Planning Committee 2022 - 2023
- Member School of Education Curriculum Committee 2022
- Mentor for Doctoral Pathways Mentorship Program 2021 - 2022
- Graduate Student Mentor for the School of Education 2019 - 2020
- Organizer and Panelist for Doctoral Student Finalist Weekend 2017 - 2018

Professional

- Manuscript reviewer for Science Education (2023 - Current)
- Manuscript reviewer for Physical Review: Physics Education (2022 - Current)
- Conference proposal reviewer for the National Association of Research in Science Teaching (2019, 2020, 2021)
- Conference proposal reviewer for the American Educational Research Association (2019)
- Manuscript reviewer for the Physics Education Research Conference Proceedings (2018, 2019, 2020)

MEMBERSHIPS AND PROFESSIONAL AFFILIATIONS

- American Association of Physics Teachers

- American Educational Research Association
- International Society of the Learning Sciences
- National Association of Research in Science Teaching
- The Association for Science Teacher Education
- UTeach Institute