Ryan Summers

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Department of Teaching, Leadership, and Professional Practice
College of Education and Human Development

NSF-Funded Project

Investigating how combining intensive professional development and modest support affects rural, elementary teachers' science and engineering practice

2022 - 2026

Materials presented is based on work supported by the National Science Foundation under DRK-12 Award #2201249.

UNIVERSITY OF NORTH DAKOTA

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Investigating how combining intensive professional development and modest support affects rural, elementary teachers' science and engineering practice

MODEST SUPPORTS

STEM STRONG

Supporting Teachers in Rural Communities for the Next Generation

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Scaling Up Two Prior Projects

Persistence of Teacher Change in Rural Schools: Assessing the Short- and Long-Term Impact of Professional Development on K-2 Science Instruction

Modest Supports for Sustaining Professional Development Outcomes over the Long-Term

Cathy Ringstaff (PI) & Judith Sandholtz (co-PI)

2011–2016

2016–2020

Supported by the National Science Foundation under DRL-1119589 and DRL-1620979.

WestEd UCI University of California, Irvine

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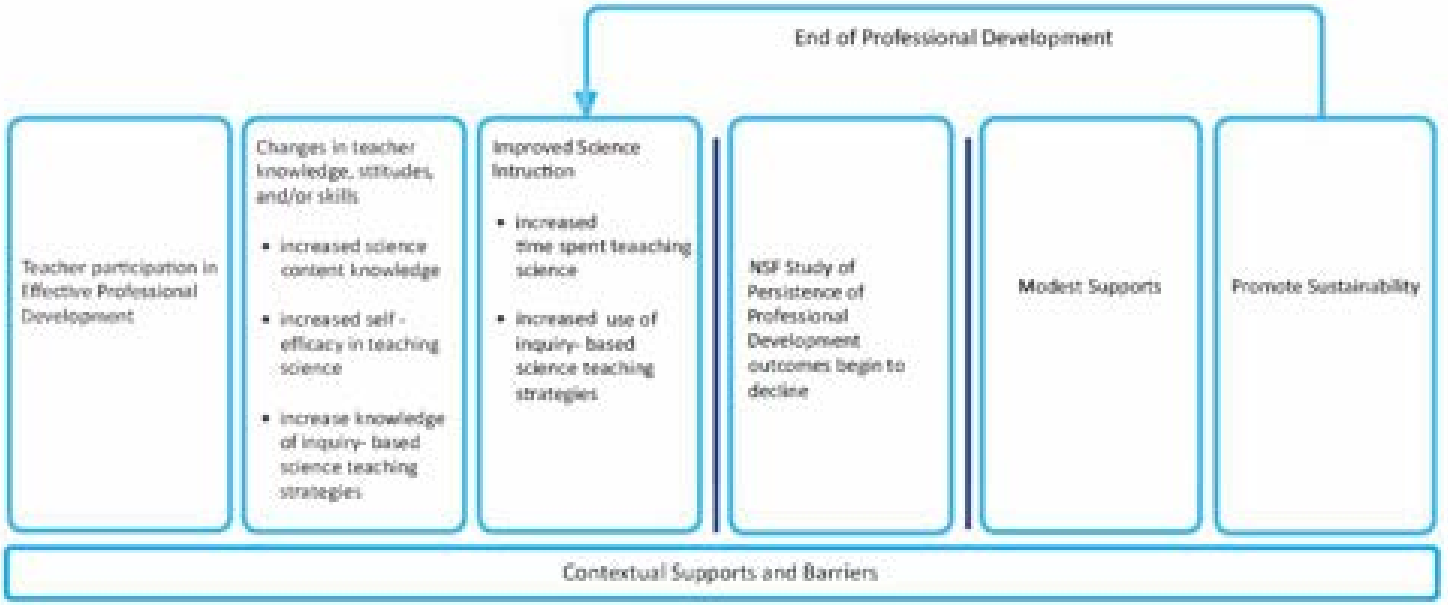

Our Research Objectives

RO1: ***Immediate Impacts of Professional Learning***

RO2: ***Sustainability with Modest Supports***

RO3: ***Influence on Engineering-Specific Instruction***

RO4: ***Impacts on Student Learning***

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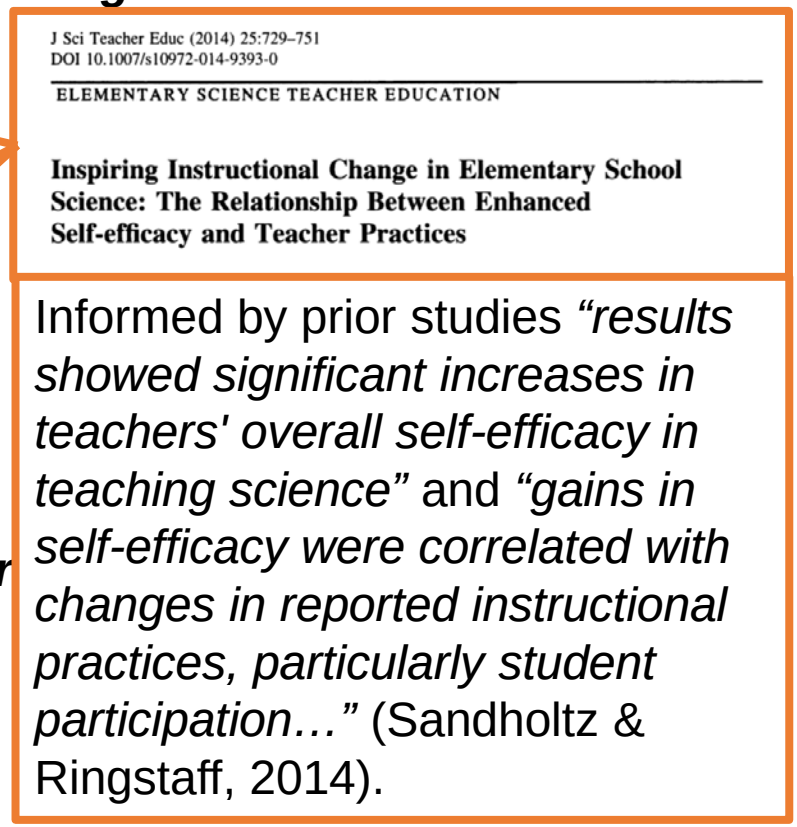

J Sci Teacher Educ (2014) 25:729–751
DOI 10.1007/s10972-014-9393-0

ELEMENTARY SCIENCE TEACHER EDUCATION

Inspiring Instructional Change in Elementary School Science: The Relationship Between Enhanced Self-efficacy and Teacher Practices

Informed by prior studies *"results showed significant increases in teachers' overall self-efficacy in teaching science"* and *"gains in self-efficacy were correlated with changes in reported instructional practices, particularly student participation…"* (Sandholtz & Ringstaff, 2014).

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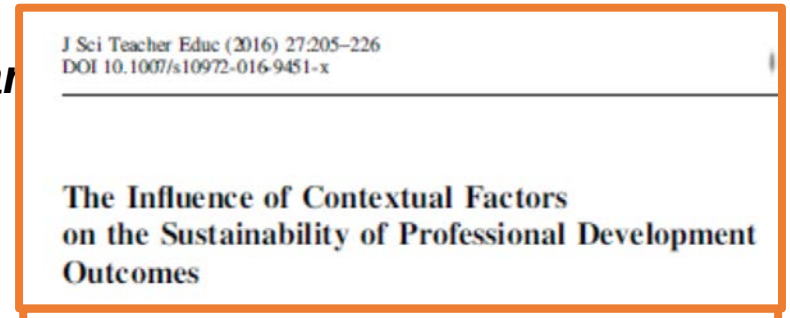

J Sci Teacher Educ (2016) 27:205–226
DOI 10.1007/s10972-016-9451-x

The Influence of Contextual Factors on the Sustainability of Professional Development Outcomes

"School contexts vary considerably… Differences in teachers' science instruction after participation in professional development reflect these variations…" and *"Supports are particularly important to teachers in sustaining science instruction…"* (Sandholtz & Ringstaff, 2016).

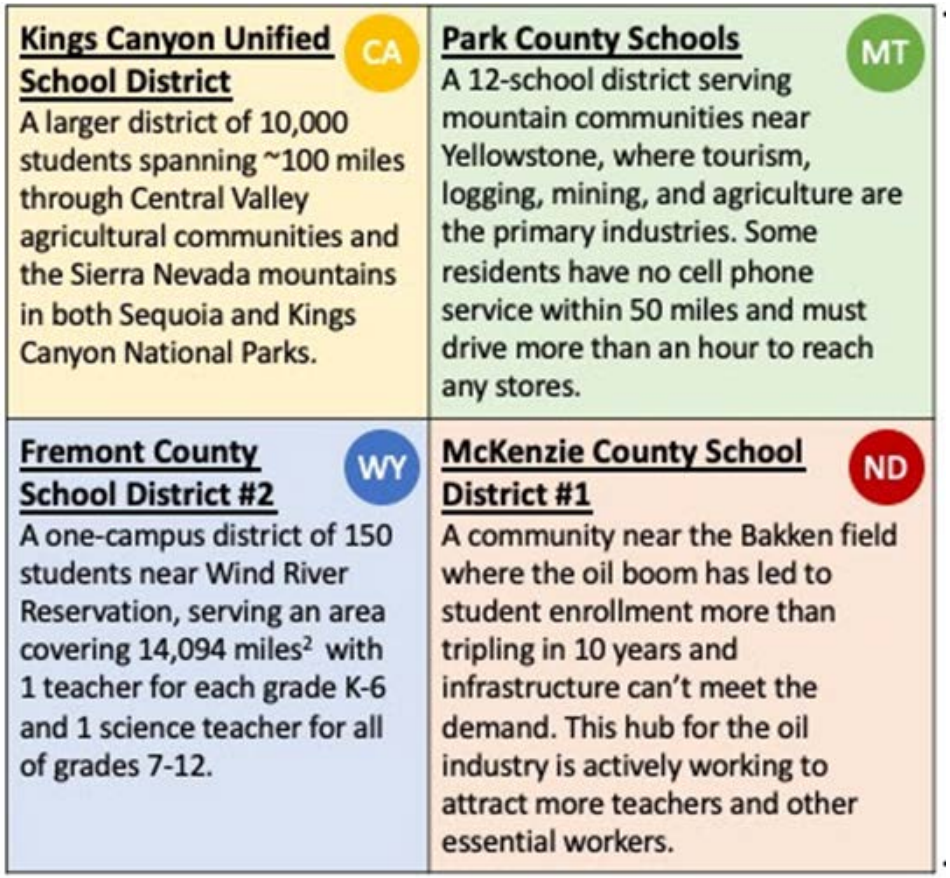
MODEST SUPPORTS

Partnering with Rural Schools

Roughly 7.3M public school students are enrolled in rural school districts (Showalter et al., 2023)

- Another 2M students attend rural schools located within non-rural districts

We set out to work with elementary teachers in small schools and rural communities



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Shared Vision of Partnership

- **We are all learners**. Professional learning (PL) helps to give teachers a foothold for NGSS-aligned instruction
  - All states involved have standards grounded in *A Framework for K-12 Science Education*
- **We will get farther working together**. Modest supports help to sustain PL in science and engineering
  - Including virtual professional learning communities (PLCs) and guided support
- **Students are the center of our work.** Our communities have assets to help engage students in science and engineering

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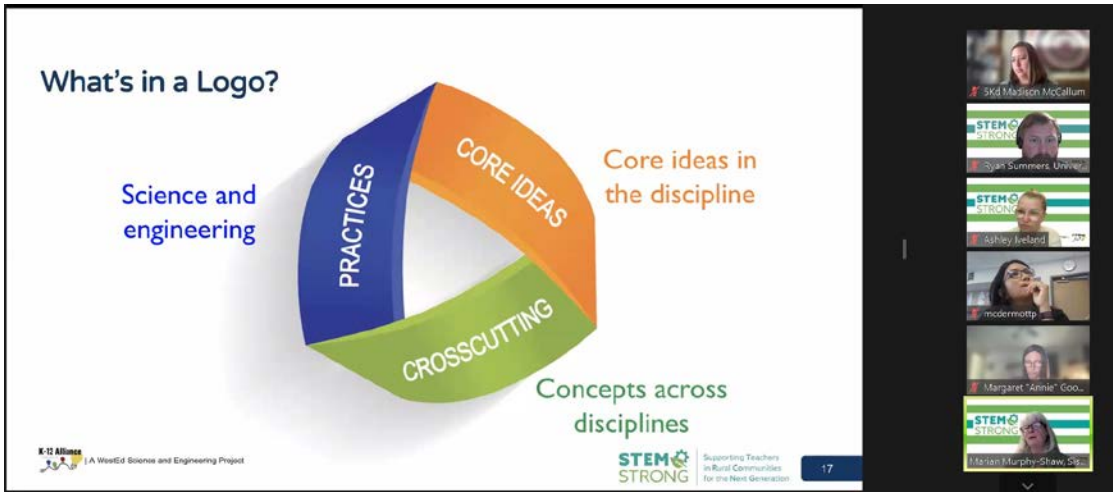
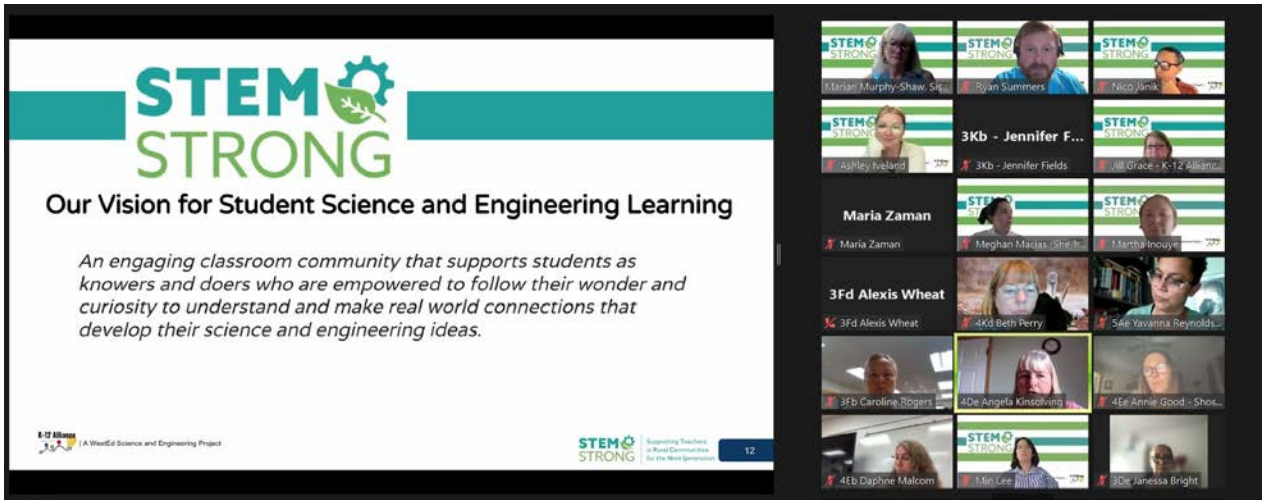


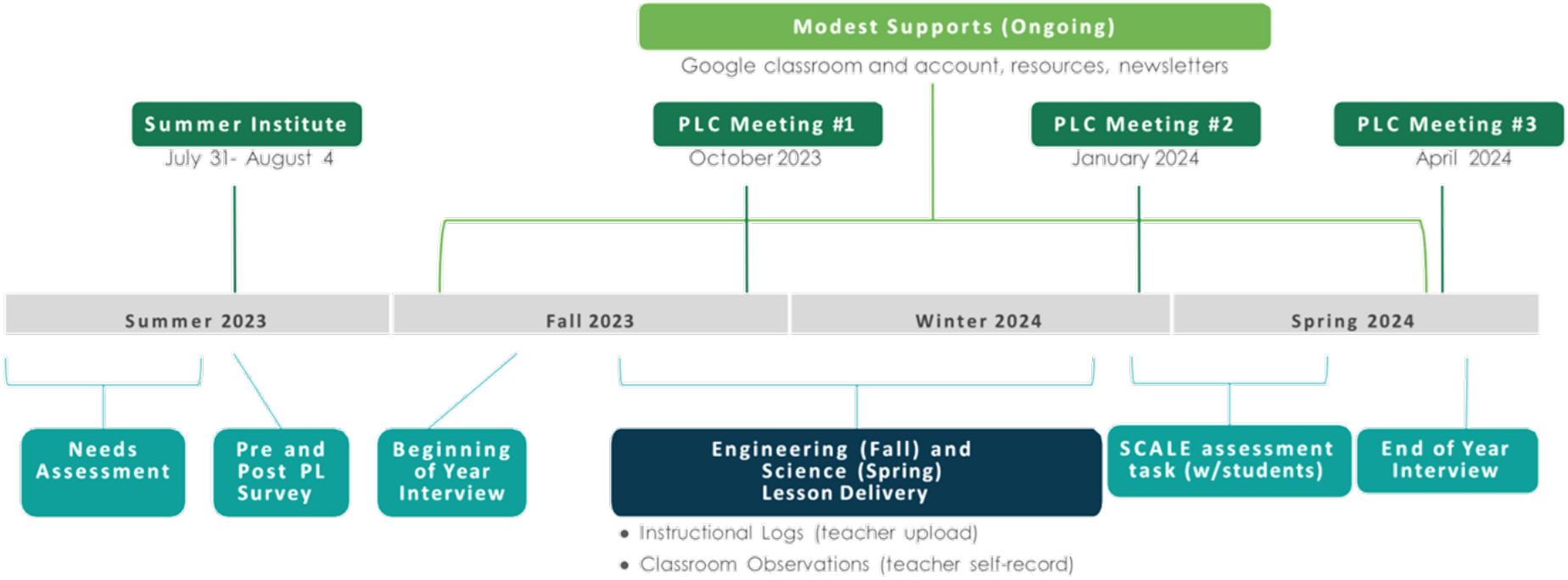
Delivering Quality Online Professional Learning

Providing Access and Connecting Teachers as Communities



STEM STRONG

Supporting Teachers in Rural Communities for the Next Generation



Activities During 2023-2024 Academic Year

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Collaborators

Advisory Board

- Judith Sandholtz (UC Irvine), Chair
- Jayne Downey (MSU)
- Christine Cunningham (Museum of Science)
- Renee Affolter (Boston College)
- Bobbi Eichhorst (WY Department of Education)

Montana

Becky Hammack, co-PI

Tugba Boz, Post-doc


PURDUE UNIVERSITY

North Dakota

Ryan Summers, PI

Julie Robinson

Min Jung Lee, Post-doc

Maria Zaman, GRA



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California

Cathy Ringstaff, co-PI

Ashley Iveland, co-PI

Meghan Macias

John Galisky, GRA



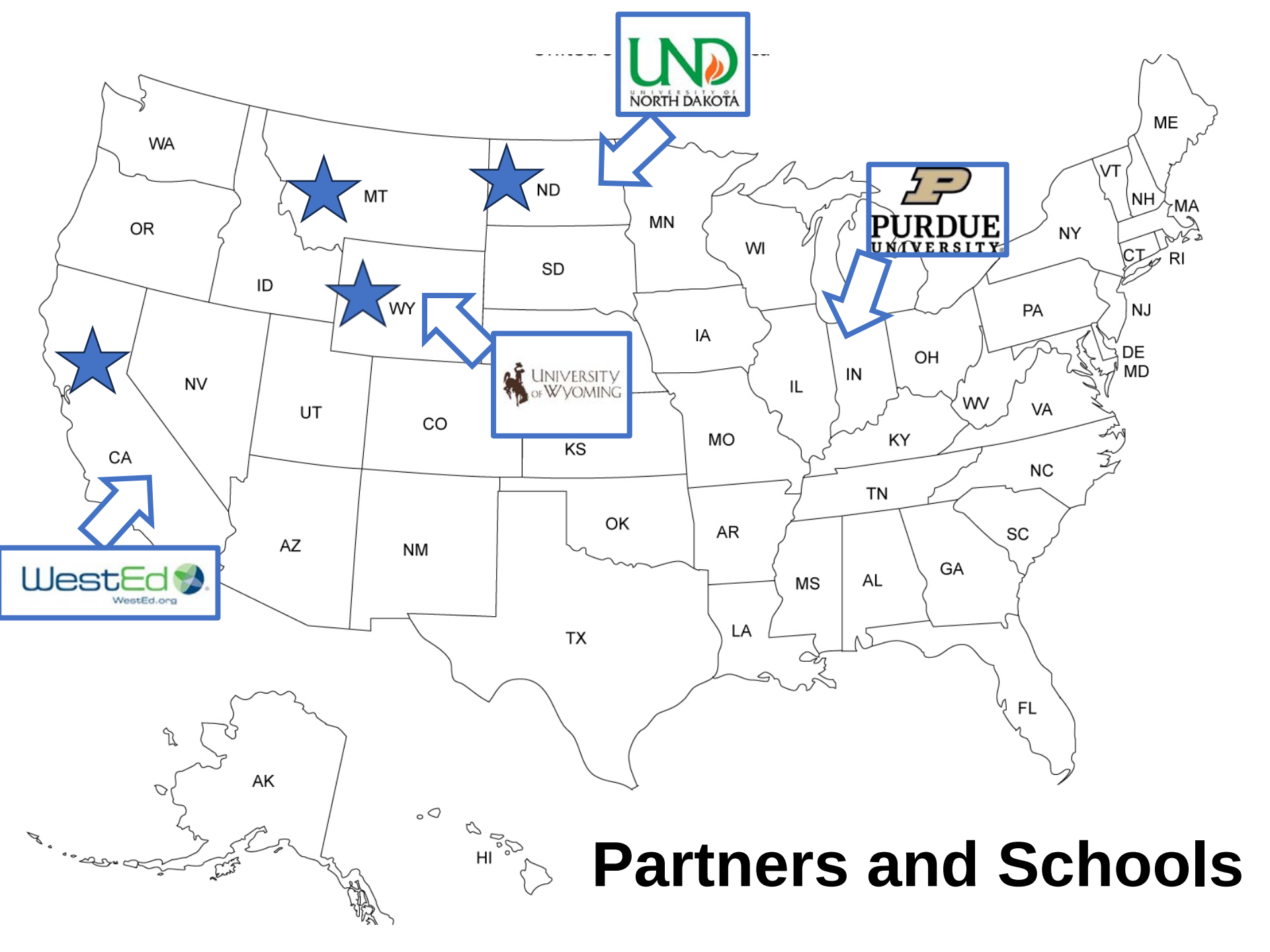

WestEd WestEd.org

Wyoming

Martha Inouye, co-PI

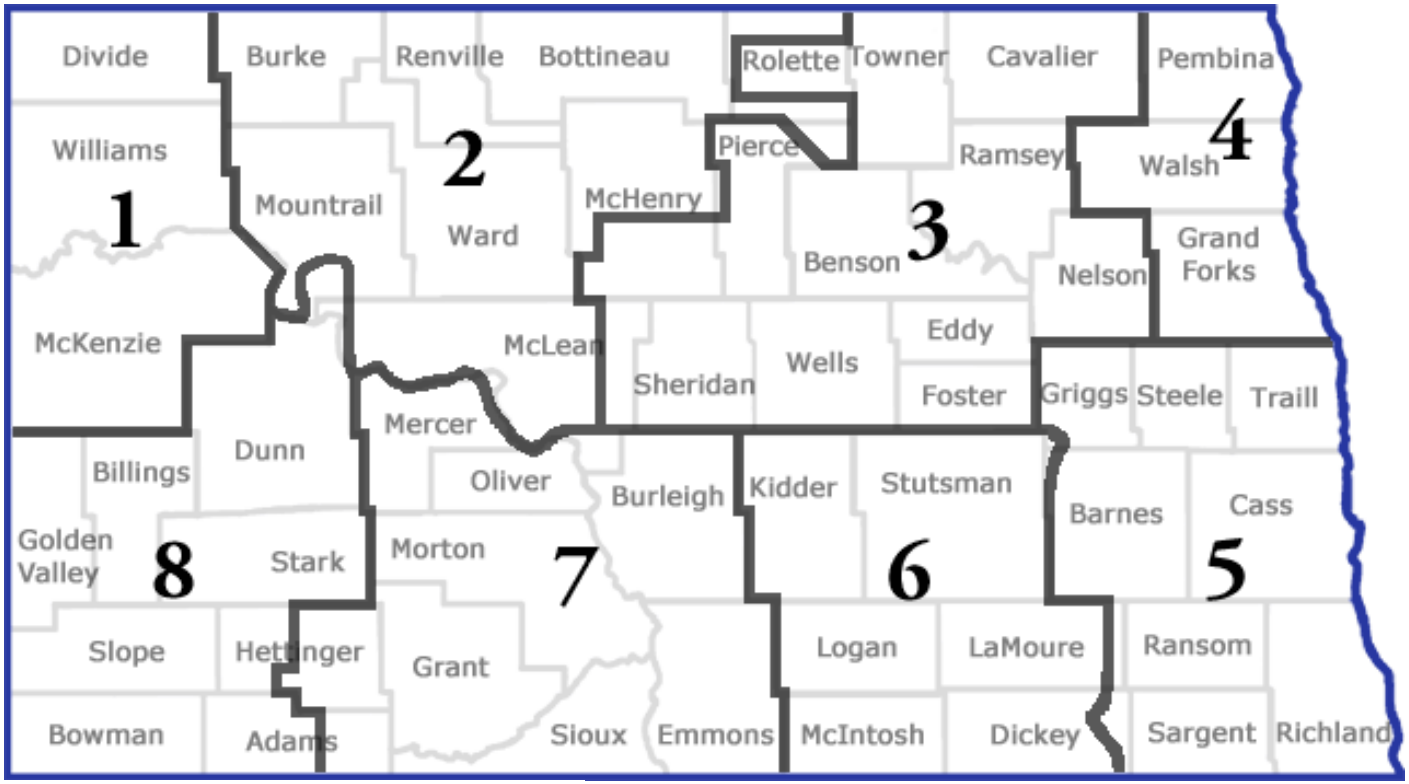
Natalie Johansen, GRA


UNIVERSITY OF WYOMING



Partners and Schools

Connecting with Teachers and Schools



NORTH DAKOTA DEPARTMENT OF PUBLIC INSTRUCTION

ND EPSCoR

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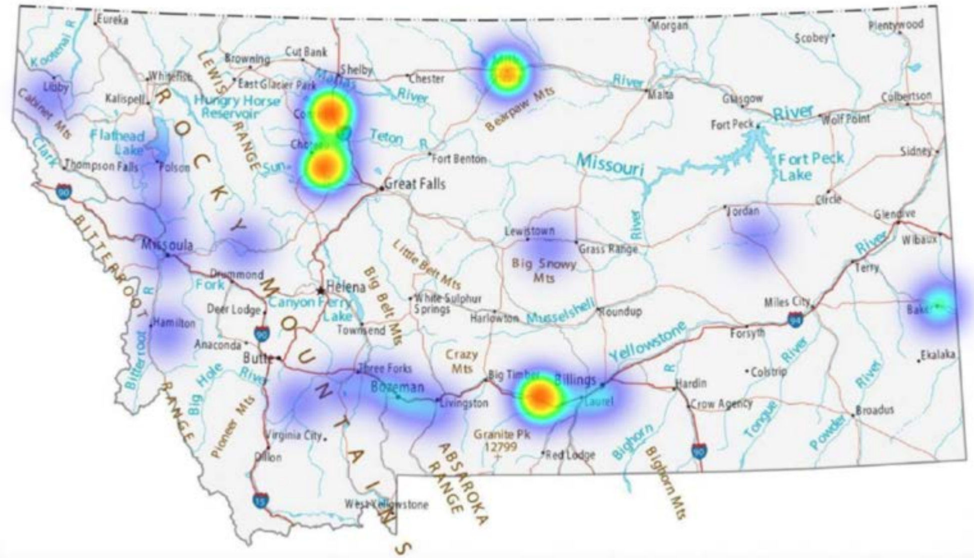

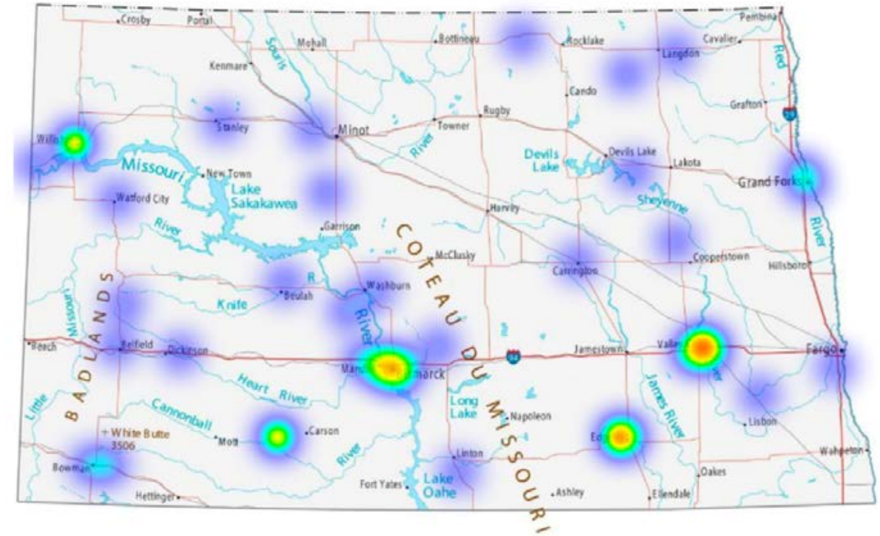

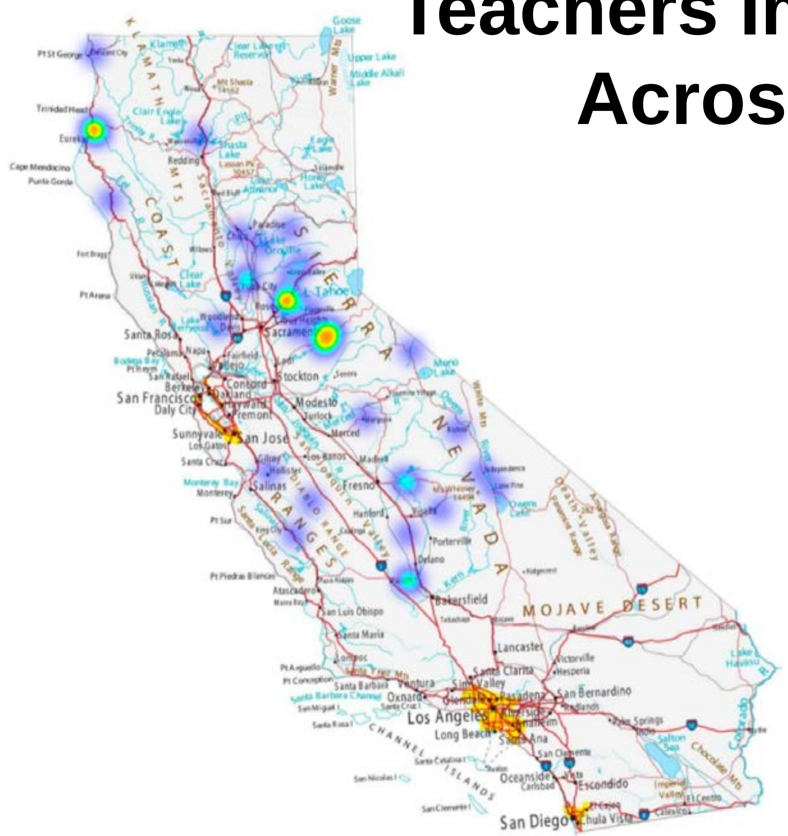

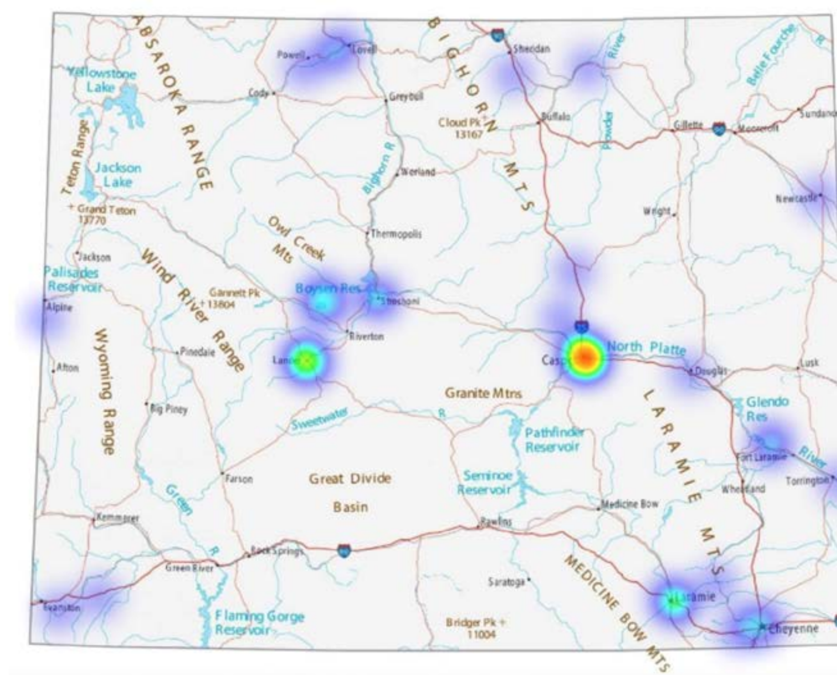

Teachers Impacted by STEM STRONG Across CA, MT, ND, and WY

Rural Partnerships

Strengths

- Teachers are excited to participate in science and engineering PL and PLCs
- Teachers often have more control over their curriculum and science lessons
- Teachers are knowledgeable about their environment and excited to connect science and engineering topics to their communities
- Teachers are collaborators when it comes to raising awareness about the project and the assets of rural communities

Challenges

- We interact with teachers at a distance. We have worked to build a positive community and establish relationships.
- Being online changes how we deliver PL and communicate with teachers. Managing electronic communications takes work.
- Teachers have varying needs, ranging content to practice. We try to plan PL and offer modest supports that fit their needs.

DISSEMINATION

Summers, R., Iveland, A., Hammack, R., Inouye, M., Robinson, J., Macias, M., Boz, T., & Ringstaff, C. (2024, January). *Offering Rural Elementary Teachers Modest Supports to Sustain Professional Development Outcomes in Science and Engineering*. Paper submitted for presentation at the annual conference of the Association for Science Teacher Education in New Orleans, LA.

Hammack, R., Robinson, J., Boz, T., Lee, M., & Summers, R. (2024). *Supporting elementary engineering instruction in rural contexts through online professional learning and modest supports*. Proceedings of the 2024 American Society for Engineering Education Annual Convention, Portland, OR.

Galisky, J., Macias, M., Iveland, A., Inouye, M., Hammack, R., Robinson, J., Ringstaff, C., & Summers, R. (2024, accepted). *Science professional learning that offers opportunities for growth in engineering self-efficacy for rural school elementary teachers*. Paper submitted for presentation at the NARST Annual International Conference, Denver, CO.

Questions?

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Websites

- Project: https://education.und.edu/research/stemstrong.html
- Directory: https://campus.und.edu/directory/ryan.summers
- Research Gate: https://www.researchgate.net/profile/Ryan-Summers

Twitter /X

- Project @stemstrong22
- Personal @RyanGSummers

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