

STEM+ Education Research Institute (SERI)

FROM FUNDAMENTAL RESEARCH TO
SUSTAINABLE CHANGE

October 2023

Las Cruces, NM



STEM+ Education Research Institute

Outline

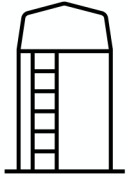
History of SERI

Mission

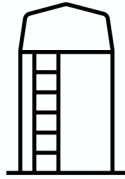
SERI and STEM Outreach

SERI and Workforce Development

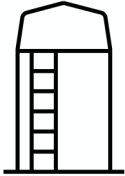
STEM+ Education Researchers and SERI



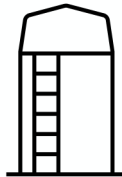
**STEM Outreach
Center**



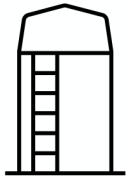
**K-12 Education
Researchers**



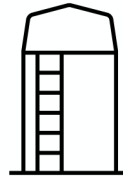
**Discipline-based
education
researchers**



**NMSU-School
District
Collaborations**



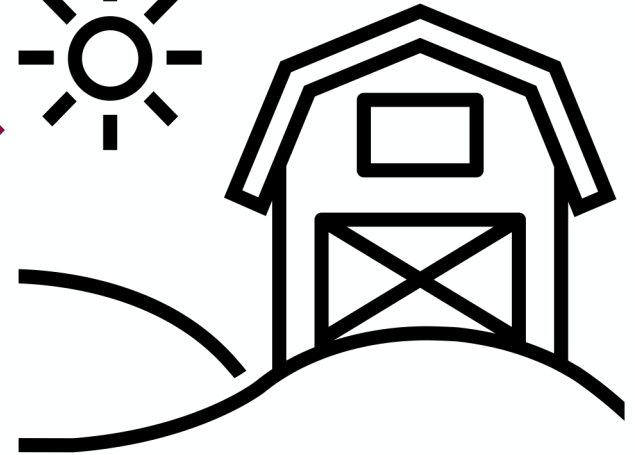
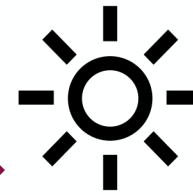
**Faculty
Professional
Development**



**Elementary
Math/Science
Specialist Program**



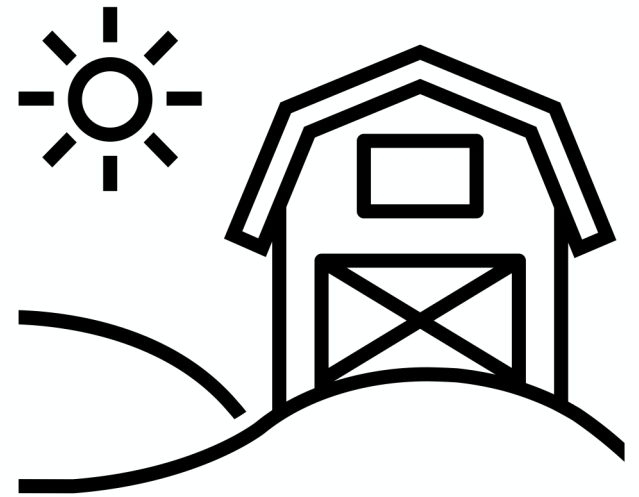
SERI



BE BOLD. Shape the Future.

- Locus for STEM+ educational research excellence
- Enhance STEM+ success at **all levels**, for **all students**
- Contribute to diversification of the STEM+ workforce
- Build research capacity through successful external funding
- Integrate assessment strategies for continuous improvement

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Research

- **1. Fundamental**
 - Teaching and learning
 - Engaging **all** students
 - particularly those historically excluded
 - Role of out-of-school programs
 - Development of workforce-ready skills

Research

- **2. Applied/Translational**
 - Piloting/testing in new settings
 - At new scale
 - Making informed adaptations

Research → Sustained Practice

To have long-term impacts



Fundamental Research

- Contributes to our understanding of how to improve STEM education

Translating to K-16 Students

- New contexts
- New scales
- Informed adaptations

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Sustaining STEM Community, Networks and Workforce

- Families
- Communities
- Schools/districts
- STEM outreach
- Employers

Fostering Collaborations & Building Capacity (possible examples)

NM STEM Ed Research Conference

Multi-institutional Collaborative Research Proposals

Work with districts to operationalize fundamental research in teaching and professional development



Synergistic Research Opportunities through STEM Outreach Center & SERI

- Curriculum research and development for after-school programs and summer camps.
- Expand STEM Career Exploration Camps and Aggie Experiences
- Longitudinal data about the impact these STEM experiences have on students from borderland communities.



Synergistic Research Opportunities through STEM Outreach Center & SERI

- Study the impact of expanding STEM content knowledge for K-6 teachers through Elementary Math/Science Specialization program (EMSS)
- Scale up a system of STEM teacher professional learning



Workforce Accelerator



- Elevate partnerships with NM employers
- Foster Career ready graduates
- Co-create experiential educational opportunities
- Partner with NMSU Global Campus to identify gaps and opportunities for micro-credential learning
- Shorten onboarding time in the workplace



NMSU's 1st cluster hire: STEM+ Education Research

- 5 faculty
- 2 colleges
- 3 departments



BE BOLD. Shape the Future.

Amanda Peel, Ph.D.

CS Education for Teachers and Students

- Build computational literacy to prepare students for modern STEM
- Integrating computational thinking (CT) into core science classes in K-12
- Teachers are essential agents of change
- How can we integrate CT to build computational literacy and teach science in new ways?
- How can we support teachers in sustainably teaching CT-STEM?



Climate Change, Computational Modeling, and Cultural Relevance

- Collaborative curriculum design, implementation, and revision
- Leveraging local issues and giving voice to multiple perspectives
- Learning about key science topics in biology, chemistry, and physics through climate change
- Developing computational thinking through modeling

Fundamental Research

- Contributes to our understanding of how to improve STEM education

Translating to K-16 Students

- New contexts
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SERI



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Questions or Comments?