

STEM+ Education Research Institute (SERI)

FROM FUNDAMENTAL RESEARCH TO
SUSTAINABLE CHANGE

October 2023

Carlsbad, NM



BE BOLD. Shape the Future.

Outline

History of SERI

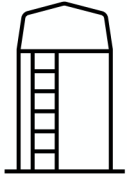
Mission

SERI and STEM Outreach

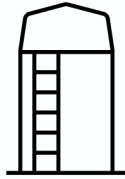
SERI and Workforce Development

STEM+ Education Researchers and SERI

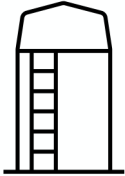
One Possible Model to Fund Translational Ed Research



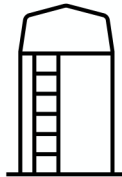
**STEM Outreach
Center**



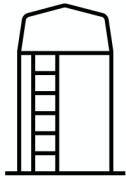
**K-12 Education
Researchers**



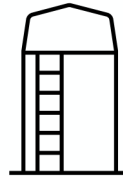
**Discipline-based
education
researchers**



**NMSU-School
District
Collaborations**



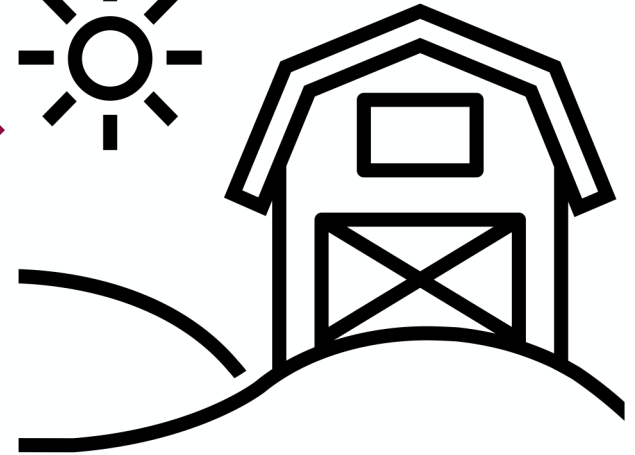
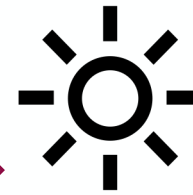
**Faculty
Professional
Development**



**Elementary
Math/Science
Specialist Program**



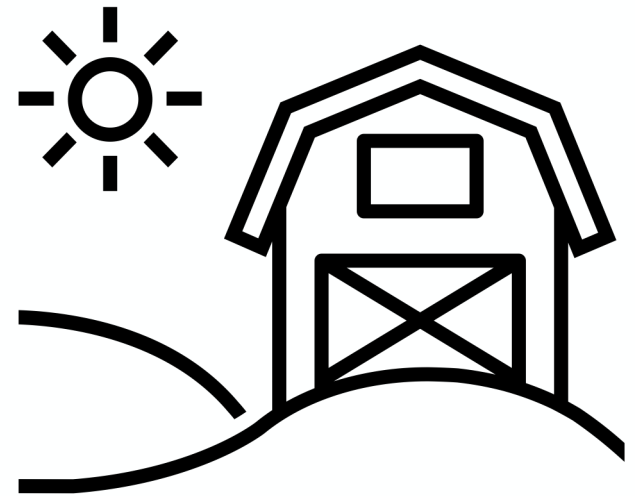
SERI



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- **Serve as 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**

SERI



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

SERI

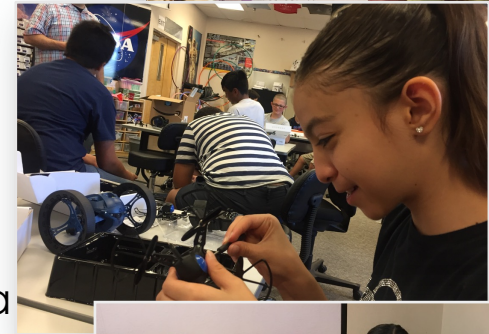


Sustaining STEM Community, Networks and Workforce

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

Synergistic Research Opportunities through STEM Outreach Center & SERI

- **Curriculum research and development for implementation in after-school programs and summer camps.** STEM Outreach currently partners with ~100 K-12 schools in New Mexico to provide out-of-school STEM learning experiences and academic support.
- **Expand STEM Camps and Aggie Experiences for 6-12 students** in our border region to understand and access career pathways to high-value STEM careers.
- **Study the impact of expanding STEM content knowledge for K-6 teachers** through Elementary Math/Science Specialization program (EMSS) to build a strong math/science foundation at the elementary level.
- **Scale up a system of teacher professional learning** in STEM that can be accessed year-round (PD, micro-credentials, on-demand courses).



Workforce Accelerator



- Elevate partnerships with NM employers to identify workforce needs (skills, knowledge level, quantity, location)
- Foster Career ready graduates for current and emerging high-wage, high-skilled, high-demand jobs
- Co-create experiential educational opportunities that increase career-readiness
- Partner with NMSU Global Campus to identify gaps and opportunities for micro-credential learning (upskill, reskill and new skill current workforce)
- Shorten onboarding time in the workplace post graduation



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

- 5 faculty
- 2 colleges
- 3 departments



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Mariana Alvidrez Ph.D.

Mathematics and CS Education

- Mathematics and CS students' development of conceptual agency, authority, skills, and positive identities. From mistakes, we learn/approach
- Intersectionality between Latino/a/e students' identities in math and CS fields.
 - Professional skills development of CS Latinx students
- My research is centrally concerned with inclusion, exclusion, equity, belonging, and justice issues in STEM education.

Fundamental Research

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SERI



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One Possible Funding Model for Translational Ed Research



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Questions or Comments?